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CHEMICAL WEEKLY

VOL. XXXIII JUNE 7, 1988 No. 39

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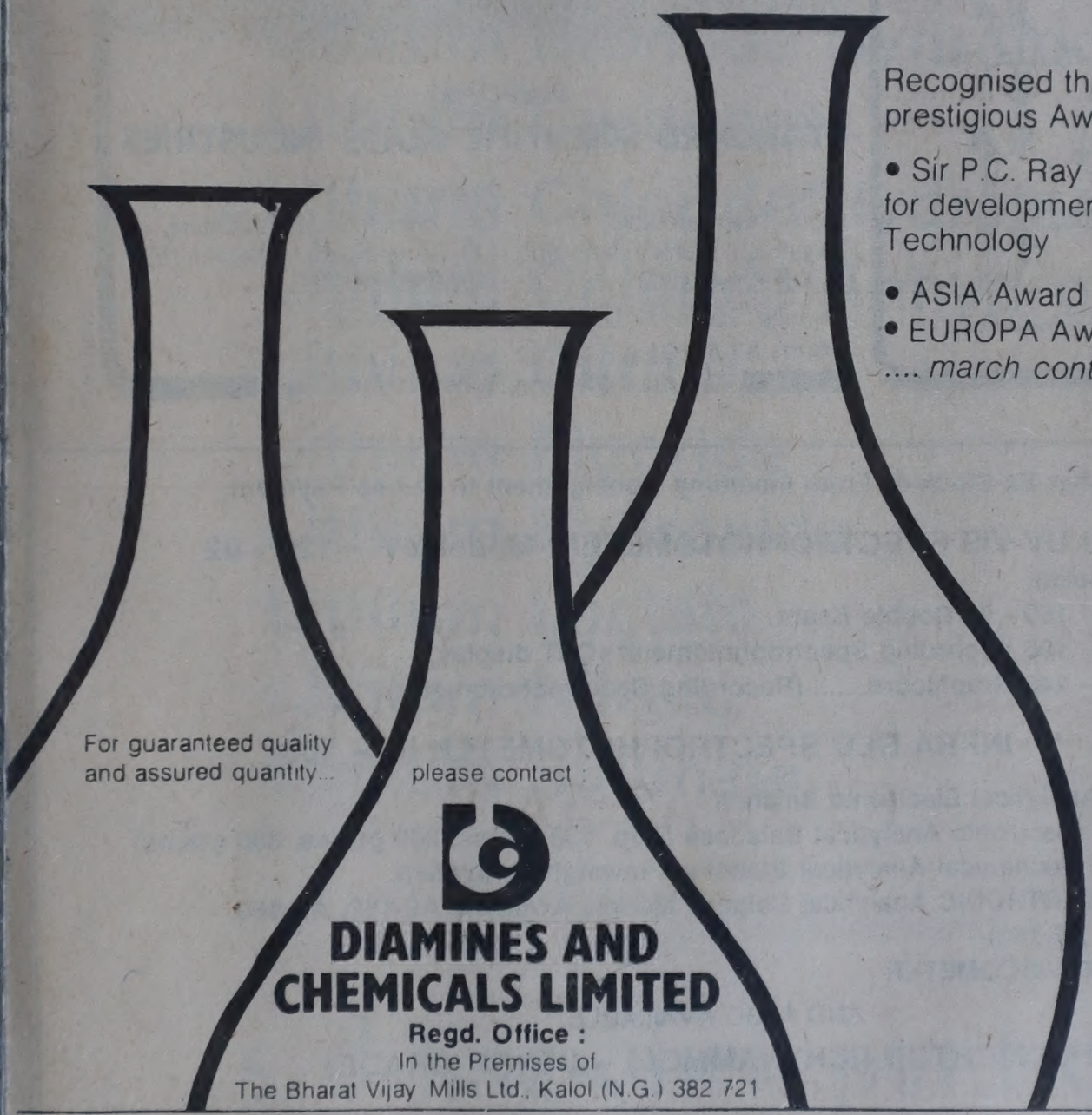

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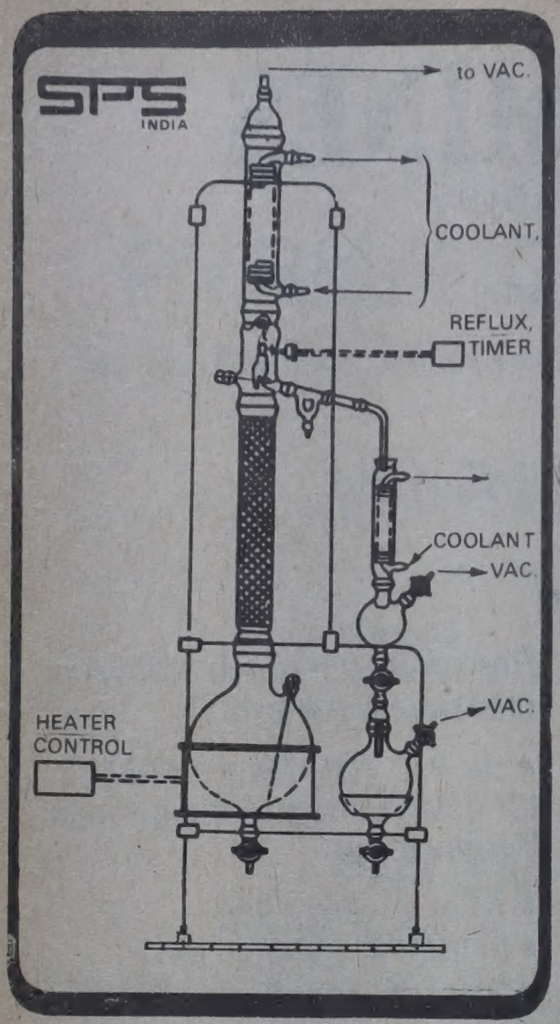

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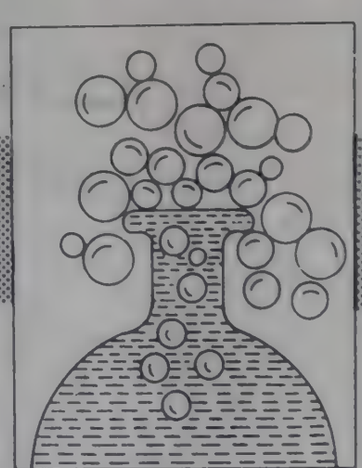

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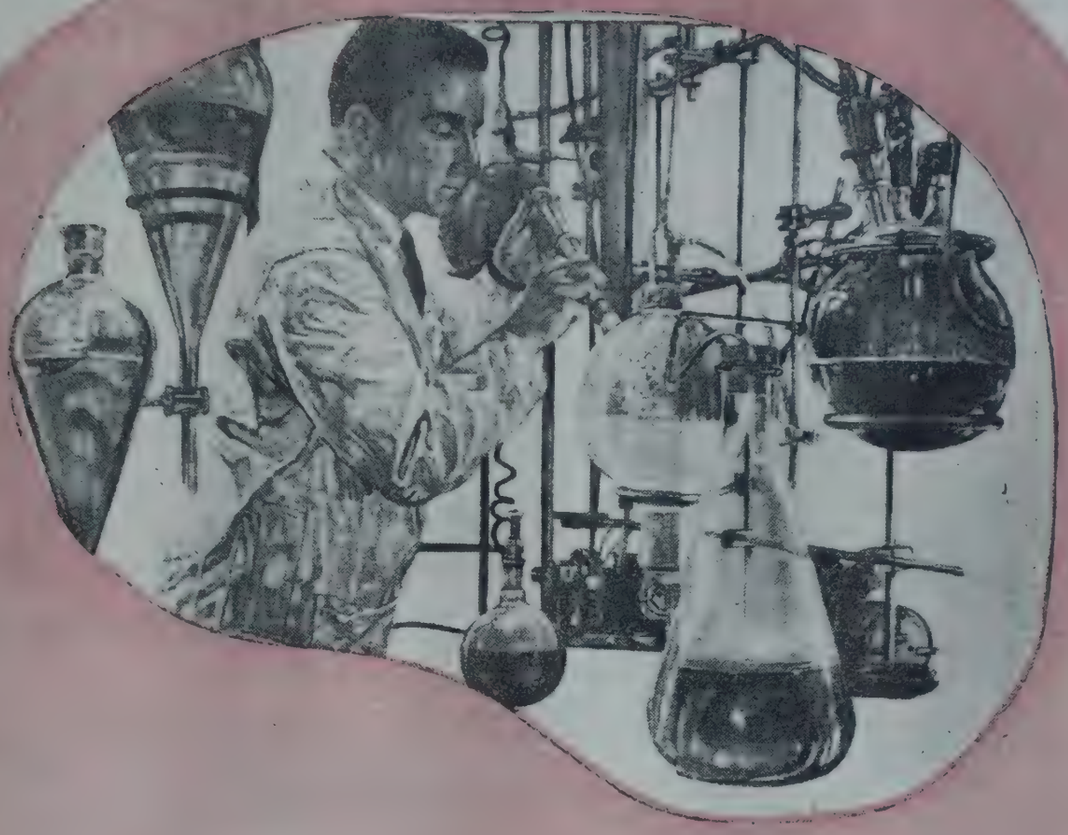

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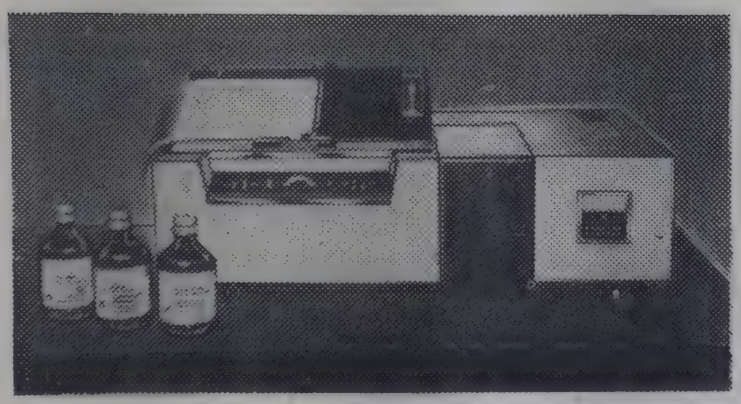

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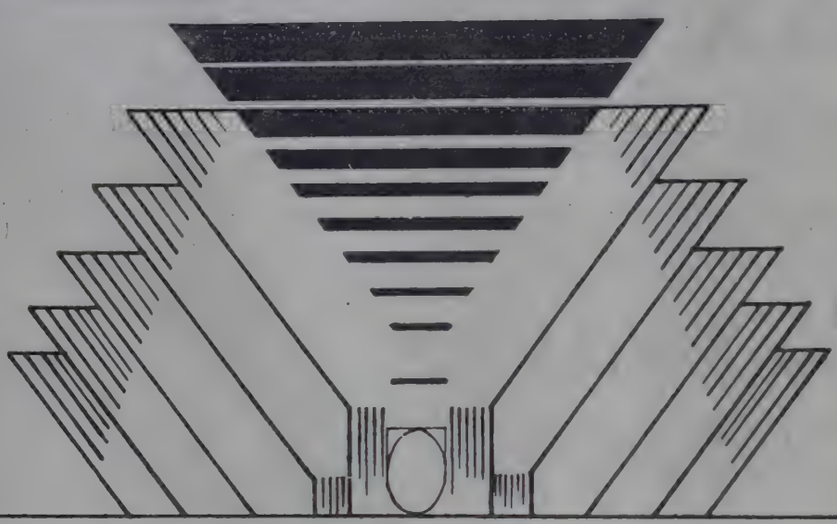

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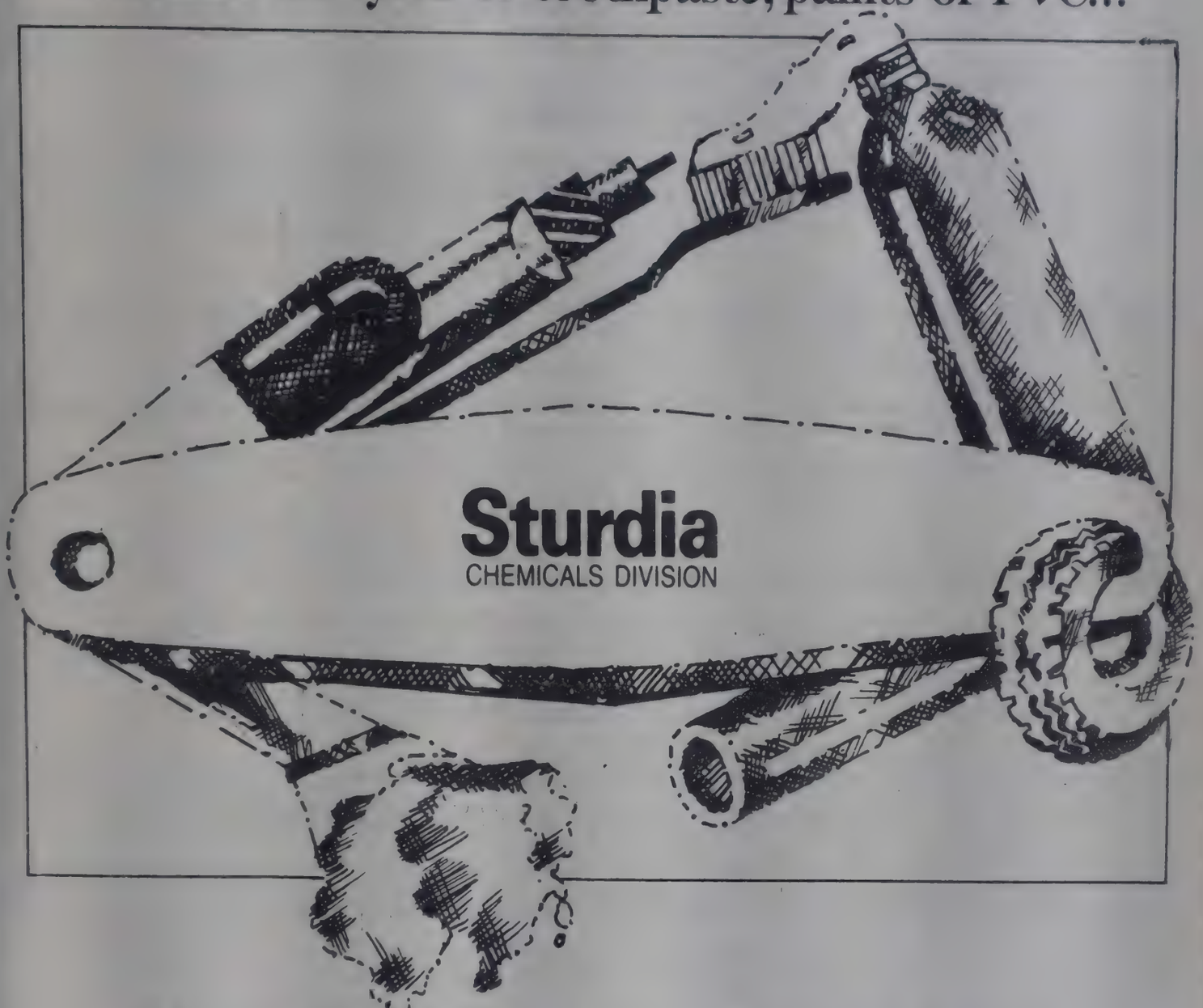

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CHEMICAL WEEKLY

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Satellite Communication and the New World Order

The development of the telegraph in 1832 and the telephone in 1876, were in both cases related to the transmission of electrical impulses through wire. The electric telegraph took fifty years to develop into a world wide system.

In London on 2nd June 1896, Marconi applied for and got the world's first patent for wireless telegraphy. By December 1901, he had satisfied himself that trans-atlantic wireless telegraphy was feasible. A commercial trans-Atlantic wireless service was inaugurated in October 1907, incorporating all the latest devices then known to Marconi Engineers, including large directional antenna systems. The essential electronic portion of the communication Satellites had thus been born. Microwave communication was to follow in due course.

The story of the development of Satellite communication is the story of a handful of pioneers who had the vision to foresee a totally different world.

The Soviet Union launched Sputnik I in October 1957, the United States followed later with Explorer I as also a number of other scientific spacecraft, many involving communications experiments. In 1965, the First INTELSAT Satellite (International Telecommunication Satellite Organisation) Early Bird was launched and its capacity of 240 voice circuits immediately tripled the communication capacity available across the Atlantic Ocean.

It also carried the First trans-oceanic television transmission; yet today, Early Bird is regarded only as a toy as compared to the Satellites such as those of the Intelsat VI Series, which will have more than 150 times the capacity of Early Bird with several times its life span. The Intelsat VI Satellite will be capable of relaying three billion bits of information per second -- the equivalent of transmitting the Encyclopedia Brittanica between the United States and Europe some 20 times a minute. How was it that the communications Satellite became of commercial value in such a short time? Three ingredients were necessary for this to happen and fortunately, all the three were available -- technology to create the system, communication requirements to form a market, and a management structure to implement the system.

Looking at the first 36 channel submarine cable just then (1955) being laid over the Atlantic Sea bed by the British Post Office and the American Telegraph and Telephone company and costing $35 million, a query was posed "Would a channel 30 times as wide, which would accommodate 1080 phone conversations or T.V. signals be worth 30 x 35 million dollars.

This was given up as an absurd thought mainly because a technical solution could be investigated only when commercial demand reached that point. Satellites have since proved to be the solution and we can provide a thousand channel and more not at a cost equivalent of many cables but only for a fraction of the cost of one cable.

A study undertaken by an American Space Communication Agency points out that today's Satellites are cheaper than any other system for a moderate number of messages for distances over 2400 Kms; by the end of the century they could be cheaper even for single channels even only 160 Kms. When this occurs, most homes are likely to be equipped with simple Satellite communication terminals; such systems will be only slightly more complex than the present colour TV sets and less expensive to mass produce.

There is and probably always will be far more communications within a continent than between continents. Satellite communications offer the widest scope. Within a few years it will be possible to orbit a Satellite with a communication capacity of tens of hundreds of thousands of telephone circuits. The Satellite would incorporate switching equipment which would transfer blocks of circuits from one pair of cities to another to meet fluctuations in demand.

At an American Astronautical Society's Conference on the commercial use of space, a Rand Corporation Scientist discussed the ultimate communications Satellite which may be in use before the turn of the century. This will have 10 million two way voice channels available without any interference making possible a thousand million circuits. In effect this could shrink the world community to the scale of "global village" or make the world community feel like a village because of a sense of proximity. It will soon be pos-

sible for anyone anywhere to consult a video display from which any form of information can be obtained from anywhere on Earth. One result will be a vast reduction in travel for business discussions or transactions. One optimist prophesies that this may result in dispersal of cities or at least a reduction in the rate of urbanisation.

There have been many studies on educational TV Satellites. Philip Reuben of Hughes Aircraft Corporation refers to an educational TV system for Mexico and the astonishing thing is its cheapness. It works out at about $2 per person per year for the cost of the system. If the population is of the order of 20 million, it can come down to half a dollar per person per year. It has been suggested that isolated schools in remote areas can be offered 12 channels at a cost of about 2 dollars per person per year. India's Space visionary late Dr. Vikram Sarabhai was greatly attracted to the prospects of harnessing Satellite TV for educational purposes.

Thus the question is not whether people in poor countries can afford Satellite television -- the real question is can they afford anything else? Communication Satellites offer the cheapest way of educating a backward community, for spreading information on agricultural techniques, more efficient food production, farming, hygiene as well as things which are necessary in order to become a stable healthy society.

Meteorological Satellites have already added much to the convenience and safety of the people in the western world and incidentally have saved milions through efficient application of the processed data to farming and other human pursuits. It can spot hurricanes or tornadoes as they are being formed in the oceans and bays alround the world and warn the area concerned at least a day or more ahead and thereby minimise the extent of devastation of human and animal lives.

It has been discovered that from Satellite photographs one can detect certain types of fungus infection on plants or trees. From Satellites it can be detected several days before a man on the ground walking through the same forest or plantation becomes aware of it.

This may be sufficient to answer an oft repeated query; Why do we spend money on space instead of spending it on the starving millions. The answer is that the money invested in Space may help him to earn a livelihood and prevent him from starving at a much earlier date than any other means. Perhaps the most significant achievement among backward countries, was the introduction in 1975 of domestic services on the alphabeticals.

The leasing of space capacity on the Intelsat system for domestic purposes has been an especially important innovation. Today some 24 countries -- ranging alphabetically from Algeria to Zaire -- use Intelsat for domestic communication network in the African Continent alone. By 1980, the figure rose to 60 countries which has now trebled to 170 countries by 1986 all over the world.

The real importance of Sputnik is not that it began the Space age, but it introduced the era of global Satellite communication. It is indeed ironical that the 20 year old competition between the two major Space powers -- the Soviet Union and the United States -- should provide the backbone for the establishment of an international organisation of more than a hundred member nations and a single global system of communication Satellites.

The space age has resulted in the joining together of virtually all mankind in a common bond of mutual awareness. Thus the direct tangible benefit of the successful launching of Sputnik by the Soviet Union has been the rapid emergency of communication Satellite technology in the United States. The Intelsat is a clear demonstration of the willingness on the part of the two giant nations to share its application with other nations in a cooperative manner to benefit all participants and users but above all the developing nations and areas.

Modern man is increasingly tied to a global culture and economy. Advances in health care, education, and communication have improved the quality of life around the world. And there are many who believe that within the next two decades, the tools of the post industrial society, namely computers, advanced communication systems, robot with artificial intelligence and advanced energy systems can largely eliminate poverty and make possible the evolution of an acceptable living standard for all humanity.

The Intelsat Global Television System provides the means for over 170 countries and territories to be linked together instantaneously, effectively and inexpensively through a new communication technology that sets aside politics and other artifical barriers separating races, cultures and nations. Through this global Satellite system, international cooperation, undreamt of in the earlier decades, is being achieved on the high frontiers of Space. The equitorial strip, with its two high and low points, 35,800 kilometers above the equator, which serves the parking lot for the geostationary Satellites is often referred to as the most valuable piece of real estate in existance.

The giant step, towards what Arnold Toybbee once called, the unification of the world has already been taken. Whether one like it or not the world of the communication Satellite will be one world in which, men will speak and understand a common language. It is but appropriate to quote from A.C. Clarke in his chapter "Voice from the Sky":

"The legend of the Tower of Babel has an uncanny relevance to our times. Higher than the wildest dreams of its builders 35,800 kilometers above the earth, we may regain what was once lost when the Lord Said: "Behold, they are one people and they have one language and this is only the beginning of what they will do nothing they propose to do will now be impossible for them."

-- T.P.S. RAJAN

CHEMARENA

S.L. VENKITESWARAN

Minimum Capacity for Chemicals

Ministry of Industry of Governmet of India have issued a policy announcement that has prescribed 65 industries which could expand their capacities to levels prescribed by experts from considerations of economies of scale. Expansion above the prescribed minimum will be on merits. Out of the 65 in the list, 47 are of chemicals, petrochemicals, drugs, synthetic fibres, plastics. Existing units could get their industrial licences endorsed for the minimum capacities in case their licensed capacity is lower. Need for separate application has been dispensed with and procedures simplified for MRTP companies. The list of 65 is likely to be expanded and perhaps the promise of further liberalisation may even take many of the items outside the purview of the I (D&R) Act.

Some of the items in the list give rise to misgivings and apprehensions. The logic of arriving at some of the prescribed data on minimum capacity is rather obscure. The raw material used is varied as also the way the programme of production is organised -- as part of an integrated programme, easy access to raw materials without too high a burden on transport, marketability of product within an easily reached neighbourhood, infrastructure facilities available at a location and so on. Even more relevant is the existing structure of the industry -- number of units and capacity levels -- and the impact which the jump in capacity of one or two of these would have on others. A few observations in this context may not be out of place.

In the case of plastics and polymers the following items are listed:

Low density polyethylene (High pressure)	90,000 TPA
Linear LDPE	60,000 TPA
HDPE	50,000 TPA
Polypropylene	50,000 TPA
VCM	100,000 TPA
Styrene	80,000 TPA
SBR	80,000 TPA
Polybutadiene	50,000 TPA

There is no mention about ethylene, and presumably this will be of the order 100,000 to 200,000 TPA based on ethane. In the case of LDPE there are two plants one of 13,000 TPA based on ethyl alcohol and the other of 20,000 tonnes linked to ethylene from naphtha cracking. Both are presently shut down but there is talk of shifting the ethyl alcohol based tiny plant to a more favourable location linked to integrated production of ethyl alcohol apparently with Government approval..

The LDPE plant of IPCL is well placed at 80,000 TPA and linked to naphtha cracker ethylene. More capacity is to be based on gas cracking but will be the other grades of LLDPE and HDPE. The Haldia Petrochemicals is to go for HDPE linked to naphtha cracker. In this context there seems to be little point in prescribing capacity levels for LDPE by the high pressure system. Newer technology provides greater flexibility in grades even to the extent of combining PP and LLDPE.

In the case of HDPE the country has been faced with acute shortage with only one plant which gradually expanded to 30,000 TPA. There are major process developments with very active catalysts and these will no doubt be adopted in the new plants which are of minimum capacities specified.

In regard to VCM there are presently plants of 13,000 to 20,000 tonnes based on ethyl alcohol or calcium carbide as carbon source and two of 30,000 and 55,000 tonnes linked to ethylene. All have direct access to chlorine from across the fence and only the larger unit has the modern oxychlorination technology. Certainly the prescription of 100,000 TPA as minimum is going to cause serious repercussions with handicap to established producers of earlier era. The capacity for VCM prescribed has to have direct access to chlorine -- of the order of 250 tonnes/day -- a level which does not exist at centres other than with the two larger producers. The olefine feedstock has to be at site and two such projects may come up at Haldia and Gujarat Gas Cracker. The price of chlorine or integrated projects with caustic soda and access to ethyl alcohol as source of

ethylene may be competitive at half the prescribed capacity level for VCM.

Styrene is to be made in the Haldia complex. There are presently 3 plants -- two fully based on ethyl alcohol for ethylene and the third for a part depending on petro ethylene available. All are about 15,000 TPA and one is going on to double this level but certainly nowhere near the 80,000. Haldia is also expected to make it as an outlet for its benzene for naphtha cracking which may provide for perhaps 50,000 TPA. It is rather difficult to visualise the rationale of 80,000 tonnes styrene. Similarly the capacity levels for SBR and polybutadiene may not have much relevance in the present context of acute shortage of butadiene.

Getting down to organic chemicals there are some more uncertainties. For caprolactam it is 100,000 TPA while two plants -- one new and one after substantial expansion will each be of 50,000 TPA. For DMT/PTA the minimum capacity is again 100,000 TPA. The capacities for DMT of plants in operation now vary from 25,000 to 45,000 TPA. The PTA plant in operation is said to be capable of making 100,000 TPA while two more of PTA are linked to aromatics complexes of Ennore (Madras Refineries) and Salimpur (Mathura Refineries). There are serous doubts about the need to expand DMT capacity when enough PTA will displace it from the polyester fibre market.

For methanol the minimum is 100,000 TPA. There are four plants of low capacity (12,000 to 35,000 TPA and one of only 6,000 tonnes). The market is limited to perhaps two plants of the specified size. If a major use for fuel is to be prescribed there could be outlet for 300,000 TPA or more. If production is based on methane (natural gas) there is no scope for the units of NFL in Punjab or the proposed unit at Haldia. There is need to find use for gas from the KG basis and methanol is the obvious choice if outlet can be found. Down the line formaldehyde is specified at 30,000 TPA and petaerythritol at 5,000 TPA. In the case of formaldehyde there is the angle of transporting two-and-half times as much due to 37% concentration. Captive production for limited uses of 30 tonnes a day is certainly attractive. For pentaerythritol the total demand is perhaps 5,000 TPA now and four plants are in operation. The economies of scale have far less significance.

Finally the capacity levels are prescribed for a series of drugs mostly rounded off to 100 TPA except for the strange case of aspirin at 2,000 TPA and ibuprofen at 200 TPA. For most of these drugs the starting intermediates are very important for competitive production and there are continuous changes in the process sequence. A capacity level has not much relevance in isolation and more often multi-product plants are set up. In the case of aspirin there are even more doubts regarding 2,000 TPA level. The real item with relevance to capacity is salicylic acid and the second stage of aspirin is quite economic at lower capacity levels when linked to acetic acid/acetic anhydride. The reactor size and design for salicylic acid is very critical and in some cases the efficiency is such as to dispense with the sublimation of older plants. Hence there cannot be any hard and fast lines for capacity levels of salicylic acid or aspirin. The country's demand is presently at a level below 2,000 TPA with two producers and two other licencees.

The above observations may have figured in the deliberation leading to the prescribed capacity levels may perhaps have been arrived at in haste and justify a second look. Strangely there is no mention of caustic soda and for sulphuric acid the figure has no relevance to the many single super phosphate plants licensed with 100 TPA of sulphuric acid.

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SKYROCKETING MEG PRICES :

Polyester industry in jitters

The sky-rocketing prices and scarce availability of mono ethylene glycol (MEG) in the international market is causing grave concern to the polyester industry, which is dependent on imported MEG to the extent of about 90 per cent of its total requirement.

MEG is one of the major ingredients for the manufacture of polyester industry. With the increased demand within the country of PVC, HDPE etc, which, are ethylene-based products, the availability of MEG for the polyester industry from indigenous sources has come down from 22,000 tonnes to about 11,000 tonnes per annum, a 50 per cent reduction.

During the last one year the prices of MEG in the international market have gone up from dollar US 350 per tonne to over $ 950 for bulk supply and $1,100 for drum supply recently. Even at this high price, availability in the international market is extremely erratic, according to industry sources.

Recently, there has been a major explosion in Shell's US Norce complex, leading to a further erosion in the supply of ethylene and MEG. Further anti-freeze demand has started and due to these factors the supply position is totally erratic and the prices are being hiked by MEG manufacturers the world over from week to week. "Throughout this year supply of MEG position is going to be restricted and the prices are expected to continue to harden in the coming months," according to the Association of Synthetic Fibre Industry, (ASFI).

ASFI has already represented to the government for substantial reduction in the import duty on MEG, in line with the steep rise in the international prices. The government has earlier this month, reduced the import duty on MEG from 155 per cent to 90 per cent.

Even with this reduction in import duty, the increase in the cost of production of polyester is substantially higher due to further increase in the cif price for the imported MEG. "Due to erratic supply of MEG, it is feared that the polyester industry may even be compelled to resort to production cuts for want of the basic raw material," ASFI added.

ASFI has pleaded with the government for further reduction in the import duty to 45 per cent, or to make it at a specific rate of Rs. 5,000 per tonne to avoid adverse impact of the continuous hike in the MEG price on the cost of production of polyester.

In line with the changes in the import duties effected in respect of PVC and HDPE during last one year, ASFI expects that the government would take a pragmatic view of the crisis situation of MEG supplies and its prices and rationalise the import duty structure, as the polyester industry may not be able to absorb such an excessive hike in the cost of production.

GOVT. ALLOWS FREE SSP SALE

The Union government has sprung a major surprise on the producers of single superphosphate (SSP) by allowing them to sell the 'unallocated quantity of SSP during the kharif 1988" in any part of the country after meeting the commitment to states for which they have been given allocations under the Essential Commodities Act (ECA). The same thing was done to SSP during the closing part of the last rabi season, but its impact was marginal because when the announcement was made in January, sales of SSP had already stated tapering off.

The government, however, has attached one condition to such free sale of SSP. It has been stipulated that the SSP manufacturers "will not get any extra freight over and above the normal freight allowed by the fertiliser industry co-ordination Committee (FICC) based on ECA allocation for the kharif 1988 season." This means that if a SSP unit in the north decides to sell fertiliser in the south outside the ECA allocation, then the cost of movement will have to entirely be borne by the producer.

Manufacturers who are nursing considerable unsold stocks of SSP will not mind bearing this additional carrying cost if they can find a market outlet. As a result of the government order, say knowledgeable sources, there will be substantial criss-cross movement of SSP during this kharif season. A free for all situation among the SSP producers will work to the advantage of dealers. It has been seen that the farmers hardly benefit from the price war among fertiliser producers.

As for di-ammonium phosphate (DAP) and other complex grade fertilisers, the government has permitted the manufacturers to sell the unallocated quantities in their respective marketing zones. On these items also, there will not be any reimbursement of the extra freight cost.

Apart from the recent order, the SSP manufacturers have for quite some time been nursing a grievance against the Centre for the "stepmotherly treatment" given to SSP on the spacious ground that it is a low nutrient fertiliser.

There has been a phenomenal growth in the capacity of SSP from 24.16 lakh tonnes in 1983-84 to 46.25 lakh tonnes in 1986-87.

BROAD BANDING OF LEATHER UNITS HAILED

The leather industry has welcomed further liberalisation of policies relating to it including broadbanding but was disappointed that licensing procedure was still being persisted with.

Mr. M. Hashim, chairman of Council for Leather Exports, told **The Economic Times**, that the footwear industry would have received a real boost had the government accepted the council's plea for dispensing with licensing procedures for units which did not entail an investment of more than Rs. 5 crores.

When licensing requirement has been done away with in respect of general industries involving an investment of upto Rs. 5 crores, it is not clear why in respect of the leather industry it is being persisted with, he said.

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Soda ash import under OGL : review afoot

The Union Government has initiated, an exercise to review the existing import provisions governing the soda ash industry. The exercise is mainly aimed at considering whether the Open General Licence facility (OGL), now in force for import of soda ash into the country, should be continued and for how long.

The Department of Chemicals and Petrochemicals has already assessed the availability and demand positions for the soda ash industry. It is of the view that the current availability of soda ash in the country will go up substantially with the commissioning of Gujarat Heavy Chemicals Ltd's plant early this year.

But at the same time, the demand for soda ash is also expected to rise, which, according to the Department, may necessitate marginal imports. The Department, however, is of the view that a decision on removing soda ash from the OGL list should not be taken in a hurry.

Accordingly, it has decided to assess the availability position of soda ash after six months from now. This has been done as the Department feels that by six months production at the plant of Gujarat Heavy Chemicals Ltd (GHCL), which has an installed capacity of three lakh tonnes per annum, will have stabilised.

Also six months from now, a more clear picture of the total annual production of the GHCL plant will be available. This will facilitate the Department to arrive at a more accurate estimate of total soda ash availability in the current year as also in the coming few years.

The decision on whether to continue to allow soda ash imports under the Open General Licence has thus been deferred for six months from now. The deferment of this decision will obviously be taken as a setback for the soda ash producers, particularly GHCL, which along with others may face difficulties in marketing soda ash at a time when imports of this industrial and household raw material are easily permissible under OGL.

In fact, the soda ash producers have been pleading for removal of soda ash from the OGL list for quite some time. Their argument was further substantiated when the GHCL plant was commissioned early this year. Even in 1987-88, production of about nine lakh tonnes of soda ash was estimated to be marginally lower than the demand for that year, estimated at 10.5 lakh tonnes.

In 1988-89, the installed capacity for soda ash will go upto 13.35 lakh tonnes from 10.05 lakh tonnes in the previous year. The gap between production and demand in the current year is expected to be further reduced to only 20,000 tonnes, as production will be 11 lakh tonnes against a demand of 11.2 lakh tonnes.

It is in view of this closing gap between demand and production that the Government is considering removing soda ash from the OGL list. What has prompted the Government to take a decision on this issue only after six months is not just the addition of fresh capacities like the GHCL plant but more significantly it is the Government's own estimates in 1989-90.

According to these estimates, demand and production will be matched at 12 lakh tonnes and the installed capacity will be 13 35 lakh tonnes in 1989-90.

But the Department is of the view that production will rise at a faster pace than estimated by it now. This view is based on two factors. First, apart from the present installed capacity of 10.05 lakh tonnes of soda ash, distributed among six plants located in different parts of the country, additional capacity to the extent of 10.73 lakh tonnes has been sanctioned to meet the future demand.

Secondly, soda ash manufacture has been now delicensed and hence the Government expects more units to undertake its manufacture in view of the demand. The process of more units entering this delicensed industry will be hastened if the OGL import facility is phased out, informed sources in the Government suggest.

It will be recalled that soda ash import was placed under OGL amidst controversy in the early eighties. The decision was opposed by most manufacturers, including the Tatas and the Birlas, both of whom have soda ash plants.

The Government stuck to its decision to allow import of soda ash under OGL, despite stiff opposition and lobbying by the big industry. The Department's move to review the issue at this juncture indicates that the OGL facility may be withdrawn only after demand-availability of soda ash is matched and only after there is no threat of cartel-like operations and arbitrary jacking up of prices by the producers.

MMTC HIKES PRICES

Prices of all non-ferrous metals, sold by the Minerals and Metals Trading Corporation (MMTC), have been jacked up by varying margins. The new prices take effect from June 1, till further notice.

The increase were effected after the inter-ministerial committee, constituted by the Union Government, reviewed the existing prices. The margins by which the prices have gone range between Rs. 500 and Rs. 30,000 per tonne.

According to an MMTC press note, the new prices in rupees per tonne with the old ones in brackets are: 74,000 (72,000) of electrolytic copper wire bars/high grade cathodes, 80,000 (78,000) of continuous cast copper wire rods, 41,000 (38,000) of electrolytic high grade zinc 41,200 (38,200) of special high grade zinc, 23,000 (22,500) of pig lead 99.97 per cent, 23,200 (22,700) of pig lead 99.99 per cent, 2,05,000 (2,02,000) of tin, 4,25,000 (3,95,000) of nickel briquettes, 4,25,000 (3,95,000) of nickel squares and 4,27,000 (3,97,000) of nickel pellets/f.shots/strips.

The prices of these metals have been increased in view of the rise of their prices in the international markets and also of the appreciation of the pound sterling and the US dollar vis-a-vis the Indian rupee.

The MMTC note clarifies that the new prices are ex-godown and are for sale from all its godowns excluding sales tax and octroi duty, which will have to be paid extra at actuals.

Subsidy for molasses export under study

The Union Government is examining a proposal to grant subsidy on exports of molasses. Exercises at official as well as industry levels are now on to find out whether subsidy is needed at all and if needed, what the extent of subsidy should be on such exports.

Export of molasses is being considered by the Government and the industry in view of the surplus availability of this raw material for producing alcohol, both for industrial and potable purposes. Molasses is a by-product for the sugar mills but the main raw material for alcohol producers in the country.

Although initial estimates of availability of molasses in the current alcohol year (December 1987-November 1988) show a shortfall of 3.38 lakh tonnes, latest assessment undertaken by the Government shows that instead of a shortfall, there would be a surplus of malasses by the end of the current year.

It is in anticipation of a surplus situation in molasses availability that the Government has decided to encourage its exports. Moreover, what has prompted the Government on this course is the alcohol producers, inability to export the entire quantity of 500 lakh litres of alcohol authorised in 1986-87.

According to official sources, the domestic alcohol producers have failed to utilise the entire authorised quota of alcohol exports even till date for two reasons. Firstly, the global market for alcohol is highly quality-conscious and alcohol produced by the Indian distillers does not always meet the stringent quality standards set by foreign importers.

Secondly, the price of alcohol in the world market is currently depressed. Exports at the prevailing prices are not only unremunerative but will also entail for the exporters substantial losses. This has also discouraged Indian alcohol producers from exporting the alcohol.

The Government has thus favourably the proposal for allowing exports of molasses, instead of alcohol. But potential exporters of molasses have represented to the Union Government pleading for grant of subsidy to make

Most of these potential molasses exporters belong to Uttar Pradesh, which has the most substantial surplus quantity of molasses.

These potential exporters have argued that the cost of moving the exportable molasses from Uttar Pradesh to the port is the element which can make exports of molasses unviable. Hence, they suggested that subsidy in the form of cash compensatory support or some other incentive could be given to reimburse to the exporters the cost of moving molasses from factories to the port of shipment.

The Department of Chemicals and Petrochemicals in the Industry Ministry is examining the representation made to this effect by the molasses producers. Such subsidy may not be required by exports from Tamil Nadu and Maharashtra, since they are located near the ports.

But in Tamil Nadu and Maharashtra there is not much surplus molasses available for export. Hence exporters of these States may not need any subsidy.

The potential exporters of molasses have stated categorically that they would not be in a position to export without subsidy because they would incur losses. Official sources thus point out that subsidy in some form has to be granted, if molasses is to be exported and the crisis likely to arise from surplus availability of molasses has to be averted.

Last year the surplus availability of molasses was estimated at over 10 lakh tonnes. This year also the surplus is likely to be of the same order after taking into account the 1987-88 demand of 42.95 lakh tonnes.

INDIA TO IMPORT 2.5 M.T. CRUDE FROM IRAQ

India will import 2.5 million tonnes of crude oil from Iraq during the current financial year.

An agreement to this affect was reached at a high level meeting of the officials of the two countries in Baghdad.

A major portion of the $ 140 million deal will be adjusted against outstanding dues, which the war affected nations owe to major Indian private and public sector companies.

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NEW POLICY FOR TANNERIES, LEATHER ITEMS

Proposals may block capacity expansion

A further expansion of tannery capacity in Tamil Nadu may be shut out under the proposed restructuring of existing capacities outlined in the liberalised licensing policy for the production of finished leather and added value items announced recently.

The policy made it clear that while there will be no restrictions on setting up of additional capacity in manufacturing finished leather from now on the government will keep in mind the need for regional dispersal of new tanning units before granting approvals. The provision that the need for restructuring the capacity in areas which are already oversaturated will also be kept in mind in considering proposals for expansion of capacities has generated fears in finished leather industry circles that they may be denied opportunties to expand and grow.

The leather industry, dominated by finished leather and semi-finished leather manufacturers are already worried that the strategic importance of Tamil Nadu in leather had been reduced in the wake of various policies relating to leather. Currently the share of Tamil Nadu in the leather trade has come down by about 60 per cent. The industry had been repeatedly warning the state government that any further erosion of the state's role will substantially reduce the employment opportunities.

It is further feared that the policy may come on the way of existing units getting a chance to modernise and upgrade technologies. There are several weak tanning units with underutilisation of capacities. Even from a long term point of view, when the consumption of leather is expected to double itself from the existing level, the existing tanneries will have to operate at peak levels of efficiency.

In fact it has been estimated that for achieving an export level of 195 million pairs of all types of footwear by the turn of the century, a quantity of 800 million square feet of leather will be required and another 200 million square feet for making leather garments which will have to be imported. It is argued in industry circles that cost of augmentation of capacities will be relatively lower, if the uneconomic tanning units are made viable through modernisation and technological upgradation.

The industry is also disappointed that the demand for delicensing upto an investment of about Rs. 1.5 crores has not been accepted though under the announced policy, it is now possible to set up footwear making units outside backward areas but by getting an industrial licence.

The announcement that units allowed to be set up will be subject to "general locational policy" mean that they will not be permitted t be located within madras city limit

The industry is expected to sugges to the Centre that footwear makin units being non-pollutant in natur should be allowed to be set up with in the industrial estates.

Such a decision will definitel give a fillip to setting up a cluster c modern footwear making units a over the country and will facilitat the task of achieving the target c export of 195 million pairs of foot year by the turn of the century whi ch is crucial for recording the pro posed quantum jump in exports, fro the leather sector by 2000 A.D.

IPCL fixes pooled price for LDPE

Indian Petrochemicals Corporation Ltd. the only manufacturer of low density polyethylene (LDPE) in the country, has fixed a pooled price of Rs. 30,500 a tonne for this commodity plastic. IPCL used to market LDPE manufactured at its Baroda plant, at a price of Rs. 26,300 a tonne until now.

Pooled pricing for LDPE has become necessary following a sharp rise in the price of LDPE in the international market. The price currently quoted in the world market ranges from $1,400 to $1 600 per tonne.

At this rate, the landed cost of imported LDPE works out well above Rs. 40,000 a tonne. As IPCL is the only manufacturer and also the agency for distributing imported LDPE, marketing LDPE at two different prices was considered an unworkable proposition.

For the plastic processing industry, pooled pricing would mean a straight in crease of Rs. 4,200 per tonne of LDPE. The local market price for LDPE is stated to be around Rs. 30,000 a tonne now.

According to informed sources, IPCL would be approaching the government for exemption of excise duty on the differential amount of Rs. 4,200.

IPCL has already tied up with a foreign supplier for the import of 35,000 tonnes of LDPE during the current year. The company had a opening stock of 20,000 tonnes the beginning of the current yea With the anticipated production 80,000 tonnes this year by IPC availability of LDPE with the cor poration should be 135,000 tonnes.

Besides these quantities, priva importers have already importe 10,000 tonnes of LDPE in recen weeks. Another 10,000 tonnes this material are also expected be imported by the private trader

IPCL also plans to import yet ar other 30,000 tonnes of LDPE in th coming months. This would mean th total availability in the countr could be 185,000 tonnes this year. against an estimated demand 180,000 tonnes.

Meanwhile, a worldwide shorta of ethylene derivatives has emerge in the last few months on accou of closure of several crackers in Eu rope and Japan.

The recent shut down of Sabi the giant petrochemical complex Saudi Arabia, owing to a major ac cident has aggravated the shortag situation further.

As there are no prospects of cre tion of new capacities for ethyle and its derivatives anywhere in th world in the near future, shorta for LDPE, LLDPE, HDPE, MEG et are likely to continue for some tim sources say.

Polyjute bags proposal to allow manufacture under study

A Proposal to allow manufacture of polyjute bags is being seriously considered by the textile ministry, it is learnt. The move, fear the HDPE woven sack industry, is likely to give a crushing blow to this sector.

The HDPE sack units apprehend that the clearance for the polyjute bags would benefit the "jute mill magnates" because they already possess the jute goods manufacturing facility to which they will add the HDPE unit and wipe out the nascent plastic packaging industry.

The concept of the polyjute bags, also known as "union bags" was forwarded to the textile ministry with a view to end the "jute versus plastic woven sacks industry". It has been argued that the union bags would help reduce cost of packaging material, develop superior packaging material vis-a-vis only jute or only plastic sacks and would help the jute industry.

But according to woven sack manufacturers, the concept is totally unrealistic. Firstly, they argue, we have a sick jute industry then we developed the HDPE sack units a point and turned them sick by preferring the jute sacks and now we are creating a "still-born industry of union bags.

It is pointed out that the D.V. Kapoor committee on perspective planning for petrochemicals had estimated the total sack requirement. According to the committee it was 3,000 million sacks by 1990, 3,500 million sacks by 1995 and 4,500 million sacks by 2000 AD.

It is worked out that the jute industry can meet requirement of only 1,900 million sacks till 1990 and progressively the share of the plastic woven sacks will go up. Further, the two sectors together would be able to meet the country's sack requirement. And therefore, there is no necessity to create additional capacity at least till the year 1995.

By developing the polyjute bag, it neither helps the sick or healthy woven sack units nor does it rescue the jute mills. The jute industry would promptly instal tape plants to produce tapes/strips of plastics for use in union bags with the result that jute sacking capacity will go up in union bags with the result that jute sacking capacity will go up by 30 per cent and leading to lower capacity utilisation of plastic sack industry. Again this would not really resolve the jute mills' crisis.

According to the All-India Flat Tape Manufacturers' Association, if the union bags are to be produced by the plastic woven sack industry, then it may have to use 70 per cent of Jute yarn by weight, which means it's tape capacity could be utilised only to the extent of 30 per cent. This will increase it's cost of production to the extent of unutilised idle capacity which would be very high.

Moreover, the association added the existing machines or facilities available with plastic woven sack industry, the use of jute yarn is not possible. The modification cost to the machines would be prohibitive, in the region of Rs. 1 'akhs per loom plus vaccum suction arrangements on all looms.

The association has urged the government to impose a ban on a new addition in tape capacity since it would cause "irreparable damage to the plastic sack units and the present glut in the jute industry will further worsen." It is also pointed out that from the consumer point of view too, the union bags would be inferior since it will cause seepage.

The HDPE woven sack units have already communicated to the government about their neverending grievances. The government order issued last year had made it compulsory to use jute for the packing of 100 per cent foodgrains, 100 per cent sugar, 50 per cent of fertiliser, except corrosive fertiliser and 70 per cent of cement. Then, a month ago, an inter-ministerial meeting decided that urea would be packed in jute bags.

The industry feels that by raising a bogey of jute farmers, the jute magnates are blackmailing the government and are cornering the increasing share of the sack market. Already, because of the fluctuating policy and the political pressure of jute mill owners in West Bengal, the government has virtually ruined the plastic woven sack units.

The All-India Flat Tape Manufacturers' Association has urged the government to keep the areas or fertilisers and non-levy cement out of the purview of the order. According to them by keeping 100 per cent goodgrains and 100 per cent sugar reserved for jute, the industry has been assured of 85 per cent of the market.

By keeping fertiliser and non-levy cement out of this order, only 15 per cent of jute production will be left to face competition with alternative mode of packaging. Against this 15 per cent competition for jute, the survival of 500 plastic sack units is at stake. As many as 80 per cent of these units are in the small-scale sector.

It is pointed out that even the consumers prefer cement and fertiliser to be packed in woven plastic sacks. The industry can now survive only if it is given a definite share of the market, further capacity is banned and the concept of the union bags dropped.

NO 'OZONE HOLE' OVER ANTARCTICA, SOVIET EXPERT

The rapid depletion in the Antarctic atmosphere causing the "ozone hole" has been reversed leading to a Soviet scientist's claim that the hole is no more.

According to Mr. Alexander Cherverikov, Director for Ozone Studies in the 33rd Soviet Antarctica Expedition, the ozone layer is now 2.5-2.6 mm in thickness, which is close to normal

Concern was caused when it was noticed around September-October last year that the ozone layer had reduced to 1.2-1.4 mm. However, the process terminated in November.

Dr. Cherverikov insisted that the phenomenon must not be regarded as a natural anomaly or a catastrophe, but seen as a specific feature of atmospheric circulation in the Antarctic, which still remains unexplained.

For the first time, the content and structure of ozone is being studied as part of a programme designed to analyse the origin of the seasonal occurrence of the "ozone hole".

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IDMA crisis blows over

The Indian Drug Manufacturers Association (IDMA) has survived a bad patch in its 26-year-old career with its warring factions striking a compromise on the controversial issue of in-house testing.

At the executive committee meeting in Bombay recently, the president, Mr. Vinobhai Shah, and other members patched up their differences with a view to averting a split and redeem the organisation's image.

A press statement jointly signed by Mr. Shah, the Vice-President, Mr. N.H. Israni and the Honorary Secretary, Mr. N.I. Gandhi recently said that "all office-bearers and members of the executive committee hold IDMA members in high esteem and will do their utmost to protect and enhance their position".

Small-scale units make up the majority of IDMA membership and the recent controversy had given the impression of this majority being opposed by a few big units who dominate the executive committee.

IDMA recognises that despite the best efforts to produce standard quality drugs and despite most rigid quality assurance controls, certain exceptional batches or packs could become substandard in course of time when stored or handled under unfavourable conditions beyond the manufacturer's control or due to exceptional "human error" the statement said. The remedy lies in constant vigilance, proper transport and storage which must be pursued together by producers, trade and regulatory authorities, it said.

On the crucial issue of in-house testing. the divergent views have been reconciled. Noting that the majority of IDMA members do have in-house labs, it said "it is the aim of IDMA to encourage in-house need-based testing facilities as much as possible. However, IDMA will also support every possible approach, including testing by well-managed Government approved laboratories or properly-equipped co-operative laboratories which may be set up by several SSI units together".

MOVE TO DECONTROL ALUMINIUM PRICES DECRIED

The move to decontrol aluminium prices has been opposed by the All-India Non-ferrous Metal Industries' Association.

In a communication to the Steel and Mines Minister. Mr. M.L. Fotedar, the Director and Controller of Aluminium, the Cabinet Secretary and the Mines Secretary, the association has said that a departure from the existing system is premature and cannot be justified on the basis of assessment of a marginal surplus in production.

The association has said that the present teething troubles of NALCO have created an acute scarcity of aluminium, acutely affecting all user-industries. As such, decontrol does not merit any priority at the moment and should be deferred until a reasonably comfortable position with an actual surplus equivalent to at least 10 to 15 per cent of indigenous production i achieved.

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Pollution control in TN decentralised

Pollution control clearance for industries in Tamil Nadu has been decentralised. The district level officer will now be given powers to enforce pollution control norms. A formal order to this effect will be passed shortly. This was disclosed by the Tamil Nadu governor Dr. P.C. Alexander, while addressing the Coimbatore District Small-Scale Industries Association (Codissia).

In his meeting with the Indian Chamber of Commerce and Industry an hour later he spelt out the rationale behind the package of incentives given to industry in TN recently. He pointed out that the SSI movement is in keeping with the policy of the government that economic power should be dispersed.

The SSI movement has been sustaining industry. The new class of people created by the movement in every district is nothing less than "a socio-economic revolution which cannot hurt the political aims of the country."

Dr. Alexander has offered government help to SSI in arranging study tours of northern centres where the electronics industry is established. He made the offer while suggesting tie-ups between those industries and SSI in the state. He urged both large and small industry in Tamil Nadu to start electronic units within a couple of years so that the state did not miss the electronics revolution sweeping across the country. In this context, it would be better to seek tie-ups rather than seek markets of their own.

Industrialists of Tamil Nadu were urged to breakaway from traditional lines like manufacturing matches in Virdhunagar, motors, pumps and textiles in Coimbatore and enter frontier fields like electronics, as the state is blessed with a disciplined labour and a vast reservoir of skilled manpower.

Analysing the problem of sickness in industry he said it was "unfortunate that industry does not seek the advice of experts until sickness sets in." He pointed to the practice in the developed countries where healthy units retailed a standing consultant. "The time has arrived when there should be a structured institutional arrangement between SSI, and institutions of technology and research departments in universities so that interactions would lead to betterment and greater productivity."

Referring to the various points made by past presidents of Codissia he said the "little helping hand" given recently by the government to SSI units to increase productivity and employment generation was a continuous exercise and the suggestions would be taken into acc in the decision-making proces future.

The president of ICC, southern gion, K.G. Balakrishnan, sought assistance of the state in acqu the land necessary for expanding ICD by moving it to the environ the civil aerodrome where land o ed by government is available. sought representation for the ch ber in the authority that wil entrusted with the development greater Coimbatore with W Bank funds.

Former president of Tanissia, Varadarajan, called for the rat alisation of the records to be m tained by SSIs. He sought a p that would base incentives and cessions on jobs in the SSI rat than on its investment. Hou for the workers of SSI underwr by the entrepreneur and the wo was suggested as an area requi urgent attention. Simplification forms, sales tax registration ac the table and ending harassment anti-theft squad of the power bo were among the reliefs SSIs quire.

Codissia's founder president Jagadeesan, showed how the a tional sales tax affected competit ness and hastened closure of the units. The abolition of the purch tax was urged along with addit al sales tax.

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Panel to fight Patalganga pollution

An action committee to fight the pollution of the Patalganga river comprising the Yusuf Meherally Centre (YMC), local citizens, environmental groups and Professor S.S. Varde, MLC, was formed on May 28th at Tara, about 70 km from Bombay.

The decision to form the committee followed a day-long seminar on the pollution of the Patalganga, organised by the YMC, a voluntary organisation active in the area.

The resolutions passed at the end of the seminar. which are to be forwarded to the Maharashtra Pollution Control Board (MPCB) and the state government, called for the setting up of an independent laboratory for testing the pollution levels in the water.

It opposed the establishment of any new industry or the expansion of any existing ones. The Government was also called upon to adhere to the Ganguly committee report according to which no industry must come up within three kilometres from the banks of the river and only small industries should be allowed within eight kilometres.

The resolution stated that industries must extend their pipelines carrying effluents up to the sea and not release wastes into the river.

It called for the upgradation of the water treatment facilities at the Chavana Water Supply Scheme (CWSS) that supplies water to 42 villages on the Patalganga.

The chairman of the MPCB, Mr. C.D. Oommachen, blamed the untreated wastes from the Khopoli township for polluting the river. He said illicit breweries and washing of trucks carrying chemical products in the river added to the pollution.

Several speakers, countering Mr. Oommachen's claim that there were no funds pointed out that when local organisations like the YMC with their limited funds were able to find the money to get the water analysed, the MPCB with its substantial annual budget was in a position to do more.

Condemning his defence of the industries, the speakers said that when the industries themselves had admitted that their effluents were pouring into the river, it was surprising that Mr. Oommachen should try and pass the buck on.

Professor Varde, who presided over the seminar said that there was a contradiction in terms when high technology was being used in an area where drinking water was still not available to the people.

Mr. S.G. Khanolkar of Bombay Dyeing and Manufacturing Co. Ltd., and a member of the Patalganga and Rasayani Industries Association (PRIA) revealed that nine industries had already prepared a disaster management plan.

He stated that it was the government's decision to create a chemical zone at Patalganga and it was not possible to suddenly reverse the process. He felt it was unfair to blame the industries alone and urged the local people to undertake monitoring of the industries on their own.

But, as one of the speakers pointed out, this was a case of the industries saying "we will use your water and you clean up after us".

Lona Industries, according to residents, rented fallow fields to dump their chemical wastes and during the rains. the chemicals leached into the soil and found its way into the river.

A deputy engineer with the CWSS stated that the water treatment facilities at his disposal was not equipped to handle chemical pollution. The only alternative he had was to stop the water supply when the pollution level rose.

A visit to the Patalganga river and the water treatment plant of the CWSS highlighted the two kinds of pollution facing the 42 villages that get their drinking water from the river.

While the drinking water source was being polluted by the wastes from the industrial colonies, further on in the river, crops and animals were being affected by the effluents that were released daily, Mr. Sriram Ahirao, secretary of an anti pollution group said.

ONGC R & D UNIT IN ASSAM

The Oil and Natural Gas Commission (ONGC) is setting up R & D Institute in Jorhat in Assam. This is besides the similar one set up in Goa at a cost of Rs. 9 crores.

The Institute of Biotechnology and Geo-Tectonic Studies at Jorhat plans to undertake intensive research in petroleum biotechnology and geotectonics with special emphasis on north-eastern states it is learnt.

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Dhaka drug policy resists MNC's

The new drug policy that Bangladesh evolved in 1982 has resulted in over 20 per cent of the people having access to medicines as compared to the less than 10 per cent earlier.

The man who is hailed as the architect of the drug policy. Dr. Zafarullah Chaudhary, points out that far from impeding the production of drugs, there is a booming Rs. 400-crore market in Bangladesh today, with more multi national companies (MNCs) coming in.

Dr. Chaudhary is in India to inaugurate a drug manufacturing enterprise at Ratnagiri which would be marketing drugs in their generic form — something which he feels is essential to eliminate the misuse of drugs.

"Promoting companies producing drugs under generic names would strengthen the demand for a rational drug policy", Dr. Chaudhary remarked.

He emphasises the need for a price policy for non-essential drugs as most MNCs raked in their profits through the sale of such wasteful formulations. "The profits are unlimited and most MNCs think it is their right to sell their useless tonics and vitamins to an ignorant public", he added.

Ironically, Bangladesh's New Essential Drug Policy is based on India's Hathi committee report of 1976 which is yet to be implemented here. With no meaningful action towards a rational drug policy yet, harmful drugs from India are finding their way into Bangladesh, Dr. Chaudhary said.

The expert committee set up in 1982 drew up a list of 40 harmful drugs that had to be withdrawn and destroyed within three months of the publication of the list. These included "Streptopenicillin" made by Pfizer, "Orabolin" by Infar, and Novalgin and Analgin made by Hoechst.

Over, 1,000 drugs were mentioned in the second list of wasteful and useless drugs, comprising vitamins, tonics and enzyme preparations. Manufacturers were given nine months to withdraw the products from the market, Dr. Chaudhary stated.

The committee report made mandatory for antibiotics to be marketed with the prescribed five-day dosage unlike in India, where such drugs can be sold as a two-day dose. This helped in reducing costs, Dr. Chaudhary explained.

The committee laid down certain guidelines for the MNCs and thus became mandatory for the MNCs to have a factory in Bangladesh to produce the drugs.

MNCs were also asked to buy quality raw materials on international competitive prices thus eliminating "transfer prices" or hiked fake prices. It was also decided to allow indigenous companies to produce vitamin injections and drops, keeping the MNCs out.

"Bangladesh became the only country where the MNCs followed the capitalist theory of a competitive market. Earlier, they never really competed against each other while now, the same antibiotic is produced by nine or ten companies", Dr. Chaudhary said.

The second stage of implementing the new drug policy of marketing drugs under their generic names, is underway, Dr. Chaudhary disclosed. He said that ten essential drugs were now being sold in this manner.

Guideline Breach

Penalties have also been imposed by the government for breach of any of the guidelines. De-licensing of the company, followed by shutting down of the factory, was undertaken if the companies produced sub-standard drugs, Dr. Chaudhary said.

The results have been significant — the price of essential drugs has halved since 1982, he revealed. Government hospitals have thus been able to buy more of the drugs and production had gone up, he added.

There had also been a change in the prescription habits of doctors. Where earlier they used to prescribe at least five or six drugs, today no more than three or four were prescribed.

Dr. Chaudhary said that it was only the tremendous support extended by third world doctors, scientists and activists that had given the Bangladesh government the courage to withstand the pressures of the MNCs and the western governments.

Dr. Chaudhary, who was awarded the Magsaysay award in 1985, has done extensive work in promoting rural health schemes in Bangladesh.

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Aluminium import under OGL deferred

The Union Ministry for Steel and Mines recently withheld its decision of including import of aluminium under open general licence (OGL).

The deferrment of the Ministry's decision, in fact, followed the resentment showed by various metal users' associations and chambers at the meeting addressed by the Minister for Steel and Mines, Mr. M.L. Fotedar. The meeting was organised by five associations namely All-India Non-Ferrous Metal Industries Association, Bombay Metal Exchange, Steel Tube Division of Confederation of Engineering Industry, Steel Chamber of Indian and Steel Furnace Association of India.

Mr. Fotedar said that he withheld the decision on the grounds of the pleas made that import of aluminium under OGL will not materialse and meet the expectations of the users, as being pointed out by Mr. Sriram Chokhani of All-India Aluminium Extrusion Manufacturers' Association. It may be noted that Mr. Chokhani earlier had pointed out that aluminium users were irked at the move to include this metal under OGL since its international prices were atleast Rs. 8,000 per tonne higher than the domestic prices.

On the steel front, Mr. Fotedar said that 1988 will see a quantum jump in the capacity of the major steel plants and the production targets of SAIL has been raised to by 18 per cent over that of 1987-88. Modernisation efforts of Durgapur and Rourkela steel plants were expected to be completed in 1993 and 1995 respectively, the Minister said adding that expansion of Bokaro steel plant to four million tonnes will be completed by October this year and further talks with Japan will begin soon for its assistance to modernise Indian Iron and Steel Company. (IISCO).

Under the new licensing policy mini-steel plants, Mr. Fotedar said, will be allowed to modernise and expand by an additional 150 per cent of their existing capacity. Recently, a protocol was signed with the USSR to examine the prospects expansion of Bhilai steel plant beyond four million capacity.

SAIL will meet the entire requirement (of supplying [illegible] gineering exporters) from its own product at prices fixed by Joint Plant Committee. This, the Minister, said will give a boost to export of engineering goods. Though as a short-term measure the Government has taken steps to allow Metals and Minerals Trading Corporation (MMTC) to step up the imports of scrap to meet the needs of the electric arc furnaces, he said. In this context, he said that for the first time five lakh tonnes of heavy melting scrap will be imported from the USSR during the current year and will be further imported "to flood the markets".

Referring to the vast availability of rich natural resources and highly trained manpower, the Minister visualised the country in the position of an exporter of steel in the coming decades, he said.

The production target has been raised by over 18 per cent for the year 1988-89 over the level of production achieved in 1987-88. Accordingly, the estimated demand would be 13.7 million tonnes in 1988-89 and about 26 million tonnes by the end of this century, the Minister added.

Laying the foundation stone of Hindustan Copper Ltd's continuous cast copper wire plant at Taloja, 50 km. from Bombay, Mr. Fotedar said. India is way behind in consumption of refined copper. He emphasised the need to upgrade production process for copper. He said that the continuous cast copper rod technology will ensure higher levels of productivity and energy saving.

The annual capacity of the plant at Taloja will be 80,000 tonnes per annum and will help in saving foreign exchange worth Rs. 200 crores.

Mr. Fotedar said that the demand for copper wire rods is increasing in the country and more plants will have to be set up to meet the growing demand. He hoped that the HCL's Taloja plant will go on stream by August 15, 1989.

Presiding over the function, the Chief Minister of Maharashtra, Mr. S.B. Chavan, said that ancillary units should also be set up. The need of the hour was to set up more industries in the backward areas of Maharashtra, he said. He called upon the HCL to give priority to the local people in employment. The State Government is willing to train manpower catering to the needs of HCL's Taloja plant, he said.

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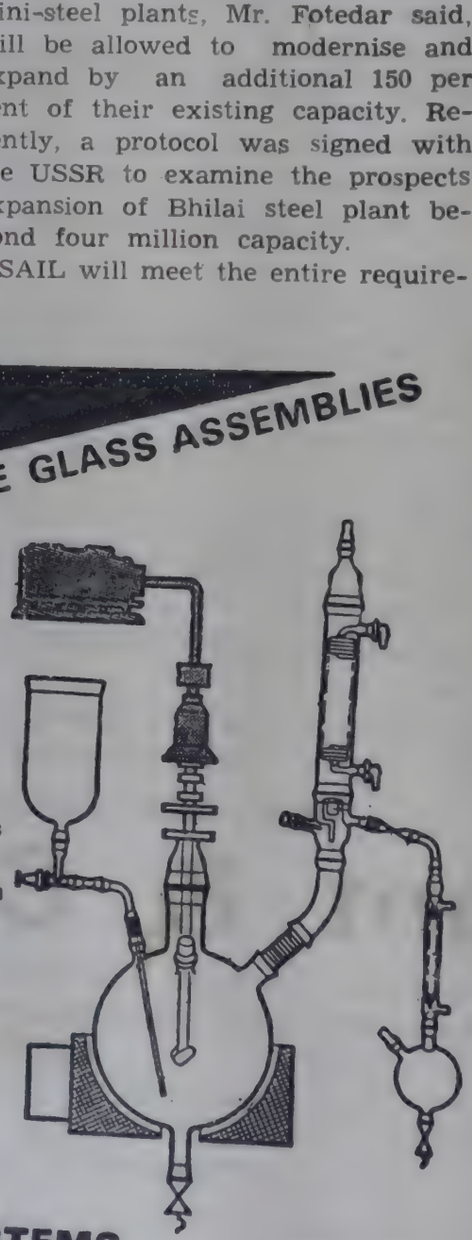

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IOLATION OF NEW DPCO

Chemists may use drug companies

The chemists' stir which started with a one-day 'bandh' on May 26th is likely to take a new turn now. All India Organisation of Chemists and Druggists will be filing individual suits against drug companies for violation of New Drug Price Control Order on the trade margin issue.

The chemists have taken a stand that most of the big drug companies have not implemented the new trade margin of 17 per cent for ethical drug formulations and 15 per cent for non-ethical formulations as provided in the new DPCO. The order has been gazetted on September 1987.

The drug companies have however implemented revised drug prices on the basis of newly fixed maximum allowable post-manufacturing expenses (MAPE). This has resulted in sharp increases in the prices of several essential medicines.

A spokesman of AIOCD said that some of the drug companies still pay a retail margin of 12 per cent for ethical formulations and 10 per cent for non-ethical formulations as provided in the 1979 DPCO. Quite a few companies are also paying a flat rate of margin of 15.5 per cent and others 16 per cent for the price-controlled formulations.

It is to be recalled that the decision to pay a flat rate of retail margin at 15.5% for all price controlled formulations with a prescription fee of 50 paise to chemists during day-time and Rs. 1 per prescription during night was arrived at a joint meeting of pharmaceutical trade, industry and government representatives held in December last.

This change was to be incorporated in the DPCO, 1987, and gazetted soon afterwards. As the government expected strong public opposition to the concept of day-time prescription fee for chemists, the issue got delayed further and no gazette notification was issued.

The government finally announced a few weeks ago that retail trade margin for all price-controlled formulations would be 16 per cent and this would be on maximum retail price exclusive of excise duty. This change has also not been gazetted as yet probably in the context of strong objections from the chemists.

AIOCD is of the view that the only valid provision relating to new trade margin now is what is provided in the gazette notification issued in September 1987. The drug units which are paying any other rate of margins have thus violated the new DPCO.

PLEA TO ALLOW ALUMINIUM IMPORTS

Mr. Navin H. Shah, President, All-India Non-Ferrous Metal Industries Association, urged the Government to allow the Minerals and Metals Trading Corporation (MMTC) to import at least 50,000 tonnes of aluminium during the current financial year till the National Aluminium Company (NALCO) is able to supply about 15,000 tonnes of metals per month on a regular basis. The main reason for the import is to bridge the wide gap between demand and supply.

Talking to newsmen, Mr. Shah said that the MMTC, which imported metals ranging from 20,000 to 50.000 tonnes per annum during the last few years to bridge the gap between demand and supply was advised to stop imports in view of the anticipated flow of metals from NALCO. Thus, while the imports of commercial grade aluminium by MMTC have totally stopped, NALCO, which was supposed to have supplied about 15,000 tonnes of metal per month by now, has been able to supply only 5,000 tonnes per month.

Thus the actual users have been facing a serious crisis in running their plants for want of adequate supplies of the metal.

To help ease part of the crisis, Mr. Shah suggested that the Government re-introduce the replenishment scheme of 1976-77, so that the export production is insulated from the vagaries of metal supply, thereby enabling the manufacturers and exporters to continue their exports on a regular basis.

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Margins : threat by chemists irks drug industry

The pharmaceutical industry is piqued and amused by Chemists Association's threat to sue them on the trade margin issue.

The industry smarting under the belief that trade was the biggest beneficiary of the 1987 Drug Prices Control Order aimed at making manufacture of essential drugs more viable is in no mood to oblige the retailers.

The DPCO has been promulgated under the Essential Commodities Act and any violation is to be reported to the Drug Controller who is empowered to issue a show-cause notice, an industry spokesman explained.

He said the wholesaler's and retailer's prices are mentioned in the invoice. If the margins provided are in violation of the law why did the chemists lift the goods in the first place, he asked. Even when there is a change in the margins, the established procedure is to write to the company which would issue a credit note.

The very basis of the charge raised by the All-India Organisation of Chemists and Druggists is fictitious, he said. The price of no controlled drug can be raised without Government approval. As for decontrolled drugs price fixation is left to the industry.

The Trade Margin Committee had recommended 15.5 per cent plus prescription service charges (50 paise during the day and one rupee in the night). In view of the burden and inconvenience such a service charge would cause to the consumer, the Government had raised the retailer's margin by another half a per cent to 16 per cent.

On an estimated Rs. 1600-crore annual sales, the half per cent hike would fetch an additional Rs. 8 crores to the trade, much more than it would have got by way of prescription service charge, it is pointed out.

MERCK TO SELL STAKE IN MERIND LTD.

Merind Ltd. an ex-Fera drug company may soon become a 100 per cent Indian company with the decision of Merck and Co. Inc. of the USA to disinvest its 39 per cent holding in the company.

The matter is being discussed by the management of Merind Ltd. and the foreign collaborator having regard to the interest of other shareholders, according to Mr. M.H. Mody, chairman of Merind.

At the annual general meeting in Bombay recently he said the company had maintained excellent relations with the collaborators both at the corporate and personal levels. He also clarified that the company had not fallen out with the collaborators.

He also added that he would be shortly going abroad to have discussions with Merck and Co. to agree upon a mechanism for the smooth transfer of its shares to other shareholders.

It is to be recalled that Merck and Co. had brought down its equity holdings in Merind Ltd., (formerly known as Merck Sharp and Dhome Ltd.) to 39 per cent from the level of 60 per cent only about three years ago. The name was also changed then.

Speaking about drug pricing and its impact on the company, Mr. Mody said that the unexpected introduction of excise duty on bulk drugs in the last budget and the changes in the excise policy would have a depressing effect on the overall profitability of the company this year.

The management would attempt to make up these losses by streamlining operations and improving profitability in other divisions. The new drug price control order has been highly unfavourable to the company.

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Revolt against TN's drug policy

The drug policy of the Tamil Nadu government has put out of joint nearly 350 pharmaceutical units in the small-scale sector, most of them set up with generous assistance by the state.

Purchases by the government for its hospitals and dispensaries all over the state totalled a mere Rs. 2 crores in 1969-70. In the last 17 years, they have increased enormously and the value of drugs purchased in 1987-88 was a hefty Rs. 30 crores.

The present policy is heavily weighted in favour of five central sector undertakings, namely, IDPL, Hindustan Antibiotics, Smith Stanistreet, Bengal Chemicals and Pharmaceuticals and Bengal Immunity and the joint sector company in Tamil Nadu, Tamil Nadu Dadha Pharmaceuticals Ltd.

The total number of drugs required by the Government last year was 1,006. Of these, around 248 items were purchased directly from the preferred undertakings. These were high-value, high-profit items. The remaining 722 items were purchased from other units through open tenders. The value of these purchases was a measly Rs. 4 crores. In addition to the items indented for and purchased from the preferred undertakings, the government also bought from the six big companies 86 drugs unasked for. Out of the Rs. 26 crores worth of purchases made from the big undertakings, Rs. 14 crores worth of drugs were supplied by the joint sector undertakings, making it the largest single beneficiary of government patronage. The small-scale units whose very survival is at stake are waging a relentless battle to get a fair share of the cake.

The controversy on the government's drug purchase policy is nearly 14 years old. Following a study by a special cell of the finance department to correct certain deficiencies in the purchase of drugs through the medical stores depot of the union government, the state government announced a new policy in 1974 conferring monopoly rights on the aforementioned joint sector and Central sector manufacturers to supply most of the drugs required by the hospitals and dispensaries. A Central purchase committee was set up to prepare a list of drugs required and fix their prices. The hospitals were given freedom to place their orders directly with the preferred undertakings. Only those drugs which these undertakings were unable to supply were to be bought from outside. The Small Industries Development Corporation (Sidco) which played a large part in the establishment of pharmaceutical units in the small-scale sector was asked to procure these drugs from the local manufacturers. If Sidco was also unable to supply the drugs, purchases were to be made through open tenders.

This policy has not worked satisfactorily. Complaints were made from time to time that the monopoly agencies were overcharging the government and violating the drug price control order. There have also been complaints that the suppliers were palming off sub-standard drugs. Some of these monopoly suppliers have been warned or prosecuted by the drug control authorities for supply of substandard drugs.

The industry in the small-scale and medium-scale sectors has demanded in one voice that the policy pursued for the last so many years should be changed and the inequity enshrined in it removed. The industry has no dispute with the government on the score of preferential treatment to Central sector undertakings. What it has objected to in the strongest terms is the preferential treatment accorded to Tamil Nadu Dadha Pharmaceuticals Limited, the joint sector undertaking.

In what amounts to a virtual chargesheet against the joint sector undertaking, the Pharmaceutical Manufacturers Association of Tamil Nadu has said that the company may be a joint sector enterprise in the legal sense but is not really so. The new joint sector undertaking came into being by the conversion of an old pharmaceutical unit. The government's share in the equity of the company has come down from about 49.5 per cent in 1974 to just about 25 per cent now. A sister organisation, the Association of Pharmaceutical and Allied Manufacturers, in a recent memorandum to the governor has alleged that while the entire profits made by the Central sector pharmaceutical manufacturers go to the Central exchequer, over 75 per cent of the profits made by the joint sector company go into the pockets of the private promoters. No other joint sector enterprise in the state has been the recipient of such generosity. They have also cited a letter from the Union Dept. of Chemicals and Petrochemicals in support of their contention that purchase preference was to be extended only to the Central sector undertaking and not to anybody else.

Tamil Nadu Dadha Pharmaceuticals Limited has refuted all the allegations and claimed that any abrupt change in the purchase policy of the government will render the huge capacities already created by the company unutilised and result in financial losses to the company besides forcing it to resort to mass retrenchment. The company has held out the ultimate threat that a well-managed and progressive company would become a sick undertaking.

The common complaint that small-scale units are incapable of supplying quality drugs is strongly resented by the pro-changers. They point out that many of the units are well-known manufacturers of even life-saving drugs. The very fact that the government purchases more items through open tenders should be proof positive that the drugs measure upto the quality standards. In any case, if there is production of substandard drugs in the small-scale sector or the large-scale sector, it is upto drug control authorities to bring the culprits to book.

Shortly before the late MGR passed away, representatives of the small-scale drugs manufacturers met him and presented their case. The chief minister is believed to have issued instructions that the policy of monopoly purchase should be scrapped and the system of open tender restored. The chief minister did not live long enough to ensure compliance with his instructions. With the imposition of President's rule, many of the decisions taken by the earlier government are kept in abeyance. So the battle goes on

Science labs will be more credible to industry : CSIR chief

Science laboratories in India are reorienting themselves to improve their credibility with the industry.

"There are several problems plaguing science research in India and the main one is credibility and acceptability of our research work by the industry," Dr. A.P. Mitra, Director-General. Council of Scientific and Industrial Research (CSIR), said in an interview with UNI.

"Our industries shy away from processes developed by our laboratories but accept without question anything labelled 'foreign", he said.

Dr. Mitra said, "The quality of our research work is the envy of the developed world. We have high quality people doing superb work."

But they need encouragement from the industry which must be ready to try their results.

"We want to change this attitude of the industry by having more interaction and ensuring that at least one-third of our research work is sponsored by the industry," Dr. Mitra said.

"Today our laboratories have been given full freedom to choose areas they think has a strong industrial application."

Dr. Mitra said Indian science laboratories are shedding old ideas and structures to take up national problems and at the same time keep pace with research in frontier areas.

"Problems like drought, development of wastelands, supply of drinking water and cultivation of better crops are today receiving priority in these national laboratories.

"At the same time, Indian scientists are also in the race for technological superiority in the frontier areas of science," Dr. Mitra said.

These frontier areas range from superconductors to carbon fibres, fast foods to drugs from the sea, cellular biology to new building materials and from new aircraft to cryogenics, defence and acoustic topography of oceans.

"These are some of the areas n country will share with India i secrets and we want to build ou own storehouse of knowledge," h said.

Nearly 40 national and regional la boratories in India function unde CSIR, an autonomous body const tuted in 1942 to co-ordinate scient fic and industrial research.

The Prime Minister, Mr. Raji Gandhi, is the President of the So ciety of CSIR.

"Today, people are asking fo quick results and our laboratorie must respond to the national pro blems," said Dr. Mitra, who wa recently honoured with the Fellow ship of the British Royal Society.

Drawing from criticism and ex perience, these laboratories are rea lising that all their work must re late to or be relevant to problem in the country, he said.

Consequently, changes have bee made in the areas of work of thes laboratories.

"You cannot work in isolation Today we are adopting new method and strategies to transfer to indus try technology evolved in our la boratories," he said.

Research in CSIR laboratories ha led to production to the tune of R 6,000 crores since Independence. I 1986-87, the production on accoun of CSIR research amounted to R 650 crores and in 1987-88 it was R 700 crores. By 1990, the figure i expected to touch Rs. 1,000 crores.

Mr. Mitra said, "People do as what is the relevance of our scien tific research? Are we anywher near the advanced countries."

"My answer is we have done fair ly well, given the constraints an resources at our disposal," he said

"The image of CSIR, the larges body of research labs, is wrongl that of a sleeping giant. The per ception has changed. It is being re cognised that the strong science an technology base can be harnesse for national problems and specifi needs."

Dr. Mitra said, "There is criticism because of lack of coordination bet ween laboratories and industries Now there has been better respon ses recently from industries afte discussions with the Federation o

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dian Chambers of Commerce and dustry (FICCI) and the Confedera-n of Engineering Industries (CEI). Dr. Mitra said. "At the same time, must be borne in mind that ese labs cannot provide a panacea r all industries' ills. We cannot eliver everything even though we ish to do so.

"When it comes to appropriate chnology, the industries cannot do ithout us. Already there is sea-hange in the industrial scenario. t least there are 1,000 research and evelopment bodies set up by the ndustry.

"This is the desired situation. We lo not want to end up doing every-hing ourselves. Our attention hould be on high technology that annot be purchased from abroad."

"CSIR's current and future pro-rammes are geared to bring about ndustrial applications in the fields ike petrochemicals, polymers, com-osite materials, engineering, cera-nics and drugs." Dr. Mitra said.

"By the year 2000, we visualise major contributions in areas like genetic manipulation, caliberation, geology and mining, oceanography, water resources, forest develop-ment, harvest technology, aeronau-tics and processed food.

"The problem of acceptability of our work will persist for some time but sooner or later recognition will surely come because the focus in our labs is on excellence.

"There is an increased Govern-ment support to our programmes and an awareness that you cannot do without indigenous scientific re-search," Dr. Mitra said.

HINDUSTAN COPPER PLANT AT TALOJA

Mr. M.L. Fotedar, Union minister of steel and mines, laid the founda-tion-stone and performed the "bhoo-mi pooja" of the Rs. 18.5-crore con-tinuous cast copper wire rod plant of Hindustan Copper Ltd. (HCL) at Taloja in Maharashtra near the New Bombay MIDC industrial estate re-cently. The specially organised func-tion was presided over by the Maha-rashtra chief minister, Mr. S. B. Chavan.

Mr. Fotedar said the rods produc-ed at the plant would be of a quality required by many modern users in the electrical industry. He said the new technology adopted at the plant would ensure high levels of produc-tivity and energy-saving. He how-ever, cautioned that the continuous cast copper rod industry should not entirely replace the traditional route for the product through hot rolling and for some time both units should go on side by side.

Referring to the announcement of HCL chairman that the plant would go into production by October. 1989, Mr. Fotedar said he hoped the plant would go on stream on August 15, 1989, and prompty sought the chair-man's assurance to advance the date.

Mr. S.B. Chavan, in his speech, expressed the hope that several an-cillary units would come up around the new unit. Demanding sufficient scope to be offered to the local peo-ple in jobs, Mr. Chavan said any re-quirement of special trade qualifi-cations could be intimated to him so that he could even start such special technical training courses in the state.

Stating that the plant was too small for public sector undertaking, Mr. Chavan asked for expansion of capacity and assured them of all in-frastructural facilities.

HCL chairman, Mr. R.S. Mishra, soon announced that the capacity would be increased from 60,000 ton-nes to 80,000 tonnes per annum. He said the highly automated plant would employ 50 people. He said the plant would use copper cathodes as feedstock and would be fuelled by natural gas supplied by ONGC.

Mr. B.K. Rao, secretary (mines), government of India, also spoke. Field Marshal Sam Manekshaw was also present on the occasion.

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FERTILISER PLANT FATE

Shaw Wallace confused by conflicting orders

The Shaw Wallace management is in a fix, not knowing how to continue operation of its 30-year old fertiliser and super phosphate factory in Madras in the wake of the conflicting stands taken by the State Government departments.

The Madras Metropolitan Development Authority (MMDA), citing locational restrictions, has directed the company either to shift its factory at Avadi to another place or close it down.

The local township authorities have taken a similar stand on grounds of health hazard and the rising public campaign against running the unit. They have also denied permission to increase the installed HP electrical installations.

But, in its recently passed order, the Labour Department has rejected the management's application to wind up the unit, employing nearly 150 persons, with effect from June 30.

In his order, the State Labour Commissioner, Mr. K. Malaisamy, has said that "though, prima facie, the grounds urged by the applicant appear to be valid, in reality, after deep scrutiny, they are not adequate enough to prove their genuineness".

According to the management, there was no system of zoning areas in 1957 when the factory was established. But, in 1974, MMDA classified the area as "mixed residential zone". Again in 1986, it was reclassified as "general residential zone". Following this, the authorities have denied permission to run the unit.

After representation, the Govt. in May last year gave a conditional permission to the company to continue production for a period of only three years. The Executive Officer of Avadi Township also gave a temporary permission. But, later reversing this order, the Avadi Township Council refused the renewal permission for running the electrical installations and asked the management to close down the unit.

The management also sought to wind up the unit citing the loss suffered by it over the last 10 years and objections raised by the local residents on environmental grounds.

Pleading against the closure, the workmen, led by Mr. R. Kuchelar, have argued that the management cannot justify the action on the ground of reclassification of area as it has taken place 14 years ago.

The management has been running the factory all these years and has made heavy investments on it.

The workers contend that the denial of permission by the Avadi Township to increase the installed HP on electrical installations and its direction to close down the factor are also not valid reasons considerin the fact that the Pollution Contro Board has given the clearance. I their view, the alleged public agita tion has been engineered with poli tical and other motives.

Disposing of the case, the Commis sioner wondered whether the appli cant has established his case by prov ing the genuineness and adequacy o the reasons in the interest of th general public as contemplated un der Section 25 O of the ID Act.

In its defence, the management ha mainly counted on the classificatio of the zone by MMDA. But, "it i really curious to note that this zon ing was done as early as in 1974 an the industry has been running hap pily all these years, Mr. Malaisamy observed.

In the normal course, opposing th MMDA order, the management coul have approached the Housing an Urban Development Department fo granting exemption. Instead, it chos to appeal to the Industries Depart ment and appeared to be satisfie with that.

The applicant could have taken re course to judicial forms in case th Government order is not in its fa vour. It has not done so. All this wil lead to an interference that th applicant was not very serious abou this prohibition all these years.

Moreover, the Government has gi ven conditional permission to ru the unit till 1990 up to which perio there can be no threat of closure.

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On the refusal of local authorities renew the D & O Trade licences, e Commissioner noted that the in- stry has been cleared by the Fac- y Inspector, the Boiler Inspector, c. As the Pollution Control Board s also given the clearance, the or- rs of local authorities may not and the test of reason and law.

Though the applicant has not filed cuments for testifying the loss in- rred by the unit, the Commission- felt that of the several leading its run by the company this alone losing.

"It could have been an eyesore for e management and probably it anted to make use of the circum- ances favourable for a closure", e commissioner said, adding that e is unable to accept the grounds s genuine and adequate warranting osure.

NDIA TO IMPORT 2.5 M.T. CRUDE ROM IRAQ

India will import 2.5 million ton- es of crude oil from Iraq during e current financial year.

An agreement to this effect was eached at a high-level meeting of e officials of the two countries n Baghdad recently. Iraq is a major il supplier to India.

A major portion of $140 million f the deal will be adjusted against utstanding dues, which the war ffected nations owe to major Indian rivate and public sector companies. hese companies had executed ma- or construction, water treatment, ailways and other projects in Iraq n the last eight years.

The remaining amount will be aid by the Indian Government in ash to Iraq. The Iraqi Government as requested India to defer the out- tanding payment for another two ears.

Iraq informed the Indian delega- ion, which comprised officials of the Commerce, Finance and other Minis- tries, that the country was not in a position to pay the entire dues on account of the ongoing war.

Iraq has refused to pay heavy dues to France and Yugoslavia.

Despite the war, more than 40 In- dian companies are still operating in Iraq. Most of them have completed their projects. These companies feel that Iraq continues to be a good place for investment.

The Indian companies have shift- ed their priorities from the construc- tion to the management and maint- enance sectors.

The Indian public sector company Rail India Technical and Engineer- ing Services has bagged a prestigious project for the maintenance of rail- ways operations in Iraq, the Rs. 282-crore five-year project standard in April 1988.

HUGE DEPOSITS OF OIL, GAS IN NEELAM

Of the recent oil discoveries that in the Neelam area on the Bombay offshore is the most prospective one, according to Oil and Natural Gas Commission Chairman Satpal Wahi.

Neelam area constitute a com- bined structure of huge deposits of both crude oil and oil equivalent gas, reports UNI.

The Chairman along with other ONGC officials including the direc- tor of personnel was on a visit to the headquarters of eastern region.

Mr. Wahi said at Assam on May 26th. that because of the crucial role of the communication system in oil industry, ONGC had given due importance on modernisation and established a direct hotline for con- necting Hazira, Bombay, Delhi and Dehradun.

POLYMERISATION INITIATORS CENTURY ENKA TO SET UP UNIT IN RAIGAD

Century Enka Limited is putting up a new plant in Maharashtra at a cost of Rs. 10 crores for the manu- facture of polymerisation initiators and alkyl esters.

The government has, however, scaled down the capacity of the polymerisation initiators plant 600 tpa to 400 tpa.

The capacity reduction follows ob- jections by Messrs Peroxides, parti- cularly against the capacity relating to polymerisation initiators. Per- oxide already holds a licen- ce for this item with 400 tpa capa- city.

Overruling the objection, the gov- ernment stated in its order that there was scope for creating further capa- city and the firm demand in its es- timate would be 750 tpa to by 1990.

The project is coming up at Ma- had MIDC industrial area, in dis- trict Raigad.

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Antarctica faces threat of mining

A glittering belt of minerals and hat the petroleum industry calls a pergiant oilfield may lie buried in ntarctica which in a resource hun- y age could dot the ice-pack with l wells, mines and fish factories, d upset a fragile eco-system.

But many scientists say this en- ronmentalist's nightmare could be a ng way off.

Traces of iron, gold, titanium, tin, pper, cobalt and uranium have en found across Antarctica. This onth, in talks in the New Zealand pital, Wellington, diplomats are lying to finalise a convention to ex- oit these deposits.

"The choice the negotiators face world shame by allowing mining a pristine environment, or a world ark to protect it", Sue Adams of he British-based environmentalist roup Greenpeace told the press.

Greenpeace members are monitor- g the talks, expected to end on ne 2, between 37 signatories of the 59 Antarctic Treaty due for review n 1991.

The original treaty formally set ide national boundaries in Antarc- ca and dedicated the continent, hich occupies 10 per cent of the rth's surface, to pure science.

But, while it banned weapons and uclear power, it said nothing about ineral exploitation.

Negotiators at the current talks rgue that a draft convention would protect the environment in Antarctica, some 15.5 million sq km in size.

But Greenpeace says the proposed new rules would remove investment insecurity and therefore encourage mining.

"One of the most serious threats hanging over Antarctica is the prospect of the exploitation of its oil and minerals", it was said.

"Little is known about the mineral deposits deep beneath the polar ice-cap. Roughly two per cent of the continent is not covered by ice, and only 10 per cent of this has been mapped, and one per cent explored for minerals.

Geologists calculated about 15 years ago, on the basis of one speculative discovery, that oil deposits could total a vast 45 billion barrels — although they considered less than a third of this recoverable. The geologists later backed off this estimate but oil analysts say the region has great potential.

Barry Heywood, deputy director of the British Antarctic Survey, said there was no hard evidence of economically viable deposits and most estimates were supposition.

He said Antarctica was an ideal global laboratory. "It's in the interest of mankind to keep environmental protection for the Antarctica".

Icy, hurricane-force winds which have blown down exploratory drilling rigs, dangerous icebergs, huge distances from markets and a lack of ports, transport and labour make commercial exploitation of on-shore Antarctica minerals a colossal task.

The sun shines as much on Antarctica as it does on the equator, yet for four months each year there is perpetual darkness. In Antarctica, the eco-system is so fragile it can take 10 years for a footprint in the moss to disappear.

Greenpeace, which has a base on the continent, says conditions in Antarctica increase the changes of accidents and would complicate a clean-up if there was a big oil spill.

Any pollution from mining or drilling would threaten the fragile eco-system where seals, whales, fish, penguin and other birds thrive at the moment, Greenpeace says.

B.B.L. MADHUKAR. NEW MMTC ED

Dr. B.B.L. Madhukar has taken over as the Executive Director (Personnel) in the Mineral and Metals Trading Corporation (MMTC).

Earlier, he was Chairman of the Mica Trading Corporation, a subsidiary of the MMTC.

MMTC now has five directors one of them acting as Chairman.

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Pesticides are not needed!

It came as a shock report when President Soharto of Indonesia banned the use of 57 pesticides, mainly used for controlling the brown plant hopper rice pest.

How could Indonesian government take such a drastic action when proponents of Green Revolution have been strongly advocating the use of pesticides for increased crop yields?

Describing the ban as "a bold move," J.B. Sumarlin, Minister of National Development Planning, said that the broad use of pesticides in Indonesia had done more harm than good, since it had done more to eliminate the natural enemies of pests than the pests themselves.

The pesticide industry is not going to believe it too easily and they have'nt done so in spite of the early warning given by Rachael Carson in her book 'The Silent Spring'. Their belief is based on the fact that each year 35 per cent of the world food crops are destroyed by pests before harvest and another 10 to 20 per cent after the harvest.

About four million tonnes of pesticides are applied the world over for control of pests with a total investment of over $ 3 billion annually. Furthermore, it is believed that every dollar invested in pest control returns $ 4 in increased crop yields. Till now this simple equation has kept the pesticide industry going.

The scene has now changed with more reports exposing harmful side-effects of pesticide application. According to a study conducted by Michael Loevinshon of the London Centre for Environmental Technology, the use of pesticides has caused an increase in the death rate among Central Luzon farmers of Philippines.

The increase in the use of pesticides, the study said, came about in the 1960's when modern rice varieties were introduced in the Philippines. The study was conducted in four municipalities of Nueva Ecija. the acknowledged 'rice granary' of the Philippines. Two periods were reviewed in the study — the years 1960-1971 and 1972-1984.

The study noted that deaths due to poisoning in the area increased 247 per cent between these two periods and deaths due to leukemia among males increased 480 per cent between the two periods. After the banning of Endrin in 1982, however, a drop in mortality was reported.

Human pesticide poisonings are a major concern in producing and using pesticides in agricultural and public health programmes. It has been estimated that annually in the world there are about 500,000 reported pesticide poisonings. In Guatemala, El Salvador. Honduras and Nicaragua, 4000 pesticide poisoning cases are reported with at least 400 deaths. In the USA, 3,000 humans land up in hospitals with pesticide poisoning each year.

While the true impact of pesticide on the ecosystems is widespread including damage to useful insects, pollution of food items and potable water, and animal poisoning, action is only taken when human beings are directly influenced. Though reliable data about its true impact on human beings is yet not fully available, indications are positive about the dangerous dimention of pesticide applications.

If all the harmful effects of pesticide application are put together, the net result would be a 'total ban' on their usage. Should then the pesticides be banned?

According to a study by David Pimental of the New York State College of Agriculture, only one per cent of the total pesticides applied are effective in controlling pests. Remaining 99 per cent goes into various environmental systems — food being the major system. This is how India tops the world in terms of DDT in human milk.

In spite of the claims, 80 per cent of the cropped land is still managed by non-chemical and biological controls throughout the world. In US alone, twice as much of cropland is managed by non-chemical controls as by pesticidal controls.

In fact. the increased use of pesticides has resulted in increased incidence of pest invasion on the crops. This has been possible due to the destruction of non-target insects as well. For example, DDT and toxaphene were used in cotton to control boll weevil and pink bollworm during the early 1940s. But in the subsequent years, new pests like cotton bollworm, tobacco budworm, cotton aphid, spider mite and loopers started attacking the crop. This happened because the natural enemies of these pests were destroyed by the pesticide application.

Since new pests are always arriving, more lethal pesticides are being evolved to control them. Thus a vicious 'poison cycle' sets in.

The 'poison cycle' can be broken in two ways — one, by following the Indonesian example and second, by adopting biological control methods. Beneficial parasitoids of insect pests have been identified in India, Sri Lanka and Indonesia, but the list is incomplete. In China, spiders, wasps and ducks have been used in integrated control programme on rice pests. In Taiwan, 79 species of natural enemies of brown plant hopper have been identified.

Such efforts need to be integrated in a much detailed manner in controlling pests of major crops. Natural enemy identification, crop rotation agronomic practices and habitat conservation are all integral to the idea of Integrated Pest Management.

What is needed is a will to bring in necessary shift from the existing 'pesticide culture'!

3000 PESTICIDE OUTLETS TO BE OPENED IN MP

With a view to boosting agriculture production, 3000 pesticide shops will be opened initially in the 30 districts of Madhya Pradesh thi year. This was informed by the Finance and Agriculture Minister Mr. Shiv Bhanu Solanki at a "Kisan Sammelan" organised at Bikaner i Dhar distract recently. He also inaugurated a building of UP-Mand and a godown, constructed at a cos of Rs. 3 lakhs at Bikaner.

An additional amount of Rs. crores will be spent on the Rs. 4 crore Maan-irrigation project fo the benefit of Manawar and Gandh wani. the two predominantly trib tehsils in Dhar district.

Uncertainty over N-plant in Kerala

Uncertainty continues to loom large over Kerala's proposed nuclear and thermal power projects even as the State's power crisis is worsening.

The reported decision of the Centre to locate the proposed nuclear power project in Tamil Nadu near Nagercoil, contrary to the earlier assurance to have it in Kerala, has caused grave concern.

There are also reports that the Central Electricity Authority has rejected a project report submitted by the Kerala State Electricity Board for setting up a second thermal power station in the State at Thrikkaripur in addition to the one reportedly sanctioned at Kayamkulam. The Chief Minister, Mr. E.K. Nayanar, and the State Electricity Minister, Mr. T. Sivadasa Menon, had visited the Atomic Energy Commission headquarters for detailed discussions on the State's plans for setting up a nuclear power station. According to official sources in Trivandrum the response of the Atomic Energy Commission authorities to the State's plea was positive although its Chairman, during his recent visit to Kerala, had expressed reservations on setting up a nuclear plant in Kerala with very high density of population.

Reports indicate that Kerala is unlikely to get a nuclear plant as the latest move is to have it in Tamil Nadu. According to information available at Trivandrum the Tamil Nadu Government has agreed to provide land required for the proposed plant near Nagercoil in Kanyakumari district. The entire cost of the project would be met by the Centre. Tamil Nadu will be eligible for 60 per cent of the power to be generated by the plant and the remaining 40 per cent will have to be shared among Kerala, A.P., Karnataka and Pondicherry.

It may be recalled in this connection that the Kerala Government had submitted a proposal to have a nuclear plant in the State with the assistance of some socialist countries.

While the nuclear plant is being denied for no fault of the State despite effective follow up and stiff lobbying a second thermal project's clearance is being further delayed allegedly due to several infirmities and inaccuracies in the project report submitted by the State Electricity Board to SEA.

It is reported to have informed the State Electricity Board of its inability to accept the report. The Board has now been asked to send a fresh report on the feasibility of the proposed project with more details about the availability of water, eviction problem, cost of doubling the railway line, transport facilities, etc.

INDIAN OCEAN: JOINT RESEARCH WITH USSR

Indian and Soviet academicians will conduct joint research studies on "Indian Ocean as a zone of peace" and "problems of security in the Indian sub-continent".

The president of the Indian Council of World Affairs, Mr. Harcharan Singh Josh, who recently visited the Soviet Union at the latter's invitation said.

Mr. Josh said the academicians of the Institute of Oriental Studies of Moscow along with the research scholars of ICWA will work on the "Indian Ocean as a zone of peace".

Scholars of the Institute of Oriental Studies, Tashkent will work on "the problems of security in the Indian sub-continent.

He said it was also agreed to in principle that about 15 Indian scholars will visit the Soviet Union in January and an equal number of Soviet scholars will visit India in October to work on these subjects. Their studies will be jointly published by ICWA and the Institute of Oriental studies, Mr. Josh added.

BHARAT VIJAY MILLS

Bharat Vijay Mills of Kalol has received necessary permissions from the Union Government for two new projects. One is for manufacturing of thermoplastic powder mouldings at Haldia in West Bengal and the another is for manufacturing of sheet moulding compound (SMC) and articles made therefrom to the tune of 1,800 tonnes per year, at Kalol. Both the projects are expected to be completed by the end of the year 1989.

The performance of its plastic division remained very encouraging and it has maintained its growth. Large sized water storage tanks marketed under the brand name of 'Sintex' continue to hold leading position. The progress of water storage tanks project at Bangalore and profile project at Kalol is quite satisfactory. The new range of doors and windows, bio-gas holders and other articles of this division, have received good response in the market.

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FERTILISER UNITS WORRIED

25-kg bags may become compulsory

The fertiliser industry seems to be jinxed. No sooner does it get over one problem than another crops up from nowhere.

The latest addition to its woes is the reported suggestion of the agriculture ministry and the Planning Commission to make it compulsory for the industry to pack at least 10 per cent of its production in small bags of 25 kg. and bear the resultant additional cost.

Under the retention price scheme, the government pays for only 50 kg. standard bags, which, according to industry sources, does not always take care of the inevitable increases.

The additional cost of packing material in small bags of 25 kg. would be about Rs. 60 a tonne and based on the anticipated production during 1988-89, the adverse financial impact of this directive would be Rs. 12 to Rs. 15 crores.

The sources say that while this may seem to be a small amount, at the present juncture, the industry cannot afford it. More important is the question whether the government is morally justified in paying the industry a lower amount on the basis of 50 kg. bags and at the same time force it to pack a certain percentage of material in smaller bags costing about 40 per cent higher.

The sources say that irrespective of who bears the cost — the government, industry or the consumer — a blanket percentage for distributing fertiliser in small bags in all the states is not justified. In states like Punjab, Western UP and Andhra Pradesh, the level of consumption is already high. Selling fertilisers in small bags is hardly justified and would be an unnecessary loss to the economy.

It is pointed out that while the need for a smaller pack in hilly and remote areas can be appreciated, selling of such packs in high consuming areas may prove counter-productive.

Industry circles point out that if the government wants fertiliser to be sold in smaller bags and does not want to bear the additional cost, it is fair that the consumer, who would be benefiting from the smaller packs. should pay the additional cost.

Incidentally, in the action plan to increase agricultural production, presented and approved by the National Development Council, it was clearly mentioned that smaller bags would be introduced so that "Small and marginal farmers may be induced to use more fertiliser" and "the additional cost involved in packaging fertilisers in small packs" would be passed on to the consumer.

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Oil pollution crisis in the gulf

Oil pollution in the Persian Gulf has never been worse, but environmentalists say there is little they can do about it as long as the waterway is a major arena in the fighting between Iran and Iraq.

"We're in the middle of a war zone, and there's nothing we can do about it (oil pollution)." said Walt Vreeland, an American adviser to the Bahrain-based environmental protection committee.

Environmental experts say that while they regard the pollution affecting marine life and the Gulf's shoreline as an indirect result of the 7½-year-old war, the actual source is unknown.

However, oil platforms and tanker ships damaged in air raids or shellings are suspected in some leaks.

"Nobody can do anything until the war stops because it's too difficult to find the sources of the leakage," said Jassim Ahmed Al-Qaseer, acting director of the fisheries in this island state.

Mr. Vreeland said Bahrain, located off the Saudi Arabian coast about halfway up the 960-km Gulf, is among the hardest-hit areas at a time when it is vying for tourist trade.

"The main thing you'll find are aesthetic problems. People just don't want to go to the beach because it's a mess down there", he said. "The other indirect effects would be reduction of fish, of sea grass beds. These are not areas you would expect to see immediate effects". Clean up efforts are already under way on Bahrain's beaches, where one resident told of seeing children with their feet covered in black goo. Oil pollution is not new to the Gulf, where wells on shore and underwater produce nearly one-fifth of the industrial world's oil.

But current pollution is "the worst I've seen", Mr. Al-Qasser said in an interview. Mr. Vreeland noted: "You have to realize we're dealing with an oil spill of unknown source, of unknown size, of unknown duration".

Observers say more clumps of oil are floating in the southern Gulf than at any time in the last year. Gulf-based shipping executive believes some of it comes from three Iranian oil platforms wrecked by the US navy in recent reprisal attacks.

Another suspected source is Iran's big Kharg Island oil terminal in the nothern Gulf which has been attacked by Iraqi warplanes dozens of times. Hundreds of merchant ships have been hit by Iran and Iraq in the war. Many have been tankers which have spilled oil when their tanks were ruptured by missiles or shells.

ONGC'S PROFIT INCREASES

The profits of Oil and Natural Gas Commission (ONGC) have increased over the year and stand at Rs. 1,505 crores during 1987-88, in spite of the price payable to ONGC for crude oil remaining constant since 1981.

The contribution to the state exchequer was Rs. 3,258.37 crores, ONGC chairman Col. S.P. Wahi told the press in Sibsagar recently.

Regarding the future plans of ONGC for 1988-89, the chairman said that the production target had been fixed at 3.1 million metric tonnes this year and drilling meterage of 2.15 lakhs and 3,700 standard line kilometres seismic coverage.

The ONGC has plans to drill 70 wells in this year, Dhansiri valley and Cachar in Assam will continue to be exploration thrust areas. Col Wahi said adding the north-eastern region had tremendous potential for future growth.

The hydro-carbon resources base if properly utilised, will not only generate revenue for the state, but also provide avenues for Assam's industrial growth employment opportunity and overall economic development, he said.

The chairman also said that the eastern region had the distinction of achieving an all-time high supply of natural gas during the year 1987-88.

A total of 232.04 million cubic metres of natural gas had been supplied to the users of ONGC in the regions as against 112.228 million cubic metres during the previous financial year, Col. Wahi said.

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Licensing policy further liberalised

The Union Government has further liberalised the licensing policy for production of finished leather, leather footwear and other leather goods in the organised sector. The objective of the major changes in the policy is to bring about all-round development of the leather footwear and leather goods industry and, thereby, increase export earnings from this sector.

The liberalisation measures, notified by the Union Industry Ministry through a press note in New Delhi recently, pertain to the locational policy for leather footwear and goods units, broad-banding facility for this sector and removal of restrictions on additional capacity creation in the finished leather manufacturing sector.

It has now been decided that licensing of new units and substantial expansion of existing units for manufacturing leather footwear and leather goods will be allowed in any location, permissible under the general location policy of the Government. This has been done as the manufacture of leather footwear and leather goods is considered non-polluting.

According to the Ministry decision, all other matters regarding export obligation, clearance from the angle of the Monopolies and Restrictive Trade Practices Act and foreign collaborations would be in accordance with the general policy of the Government. It is, however, stipulated that change of location of the existing units manufacturing leather footwear and leather goods from centrally notified backward areas to the permissible locations will not be allowed.

The Government has also decided to introduce broad-banding in the leather goods industry for the purpose of licensing. This has been done to enable the manufacturers of any of the following items to adjust their product mix depending upon the market demand. The broad-banding facility will be available to companies subject to the MRTP Act and Foreign Exchange Regulation Act (FERA).

The broad-banding facility is made available to the following items: Leather footwear such as shoe uppers, soles, full shoes, leather goods such as suitcases, wallets, bags, belts, gloves and garments.

According to the Ministry's press note, the broad-banding facility has been introduced with a view to optimising utilisation of capacity and providing the necessary flexibility to exporters to meet the changing patters of demand for leather footwear and leather goods in the international market.

The other decision of the Government pertains to the finished leather sector, where the licensing of new units and substantial expansion of the existing units has been liberalised so that good quality finished leather is available for manufacturing leather footwear and leather goods for exports.

As a result, there will be no restrictions on setting up of additional capacity in manufacturing finished leather from now onwards.

However, while granting approvals to new units or substantial expansion to the existing units, the Government will keep in mind the need for regional dispersal of such units and also the need for restructuring the capacity in areas which are already oversaturated.

Such approvals will be granted on a case-to-case basis, in consultation with the State Governments concerned. Manufacture of finished leather in the organised sector will also continue to be taken up, as usual, from the semifinished stage and not from the stage of raw hides and skins.

These liberalisation measures have been introduced after keeping in mind the Government strategy for leather exports, which aims at maximising export of value-added items rather than of finished and semi-finishd leather. The strategy is the outcome of the Government recognition that the industry has an enormous potential for increasing India's share in the international market for leather footwear and leather goods.

Earlier in February, 1986, a similar impetus for increasing export production by this sector was given by revising the licensing policy for leather footwear and goods industry. This review was undertaken after this sector was identified as the thrust area for exports and the need for promoting its growth for export production was recognised.

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Long - term coal deals

Now that it is almost certain that India will need to import coking coal for its steel industry in increasing quantities in the coming years, it is only proper that the modalities followed for making such purchases should come under closer scrutiny. Imports, which averaged around three million tonnes annually during the last few years, are likely to go up to at least four million tonnes.

So far the purchases have been made on a spot basis. Global tenders that had been floated for this purpose did mention that India was willing to enter into long-term contracts. But the response to this part of the tender was poor. Indian authorities also did not press too hard for such long-term deals because they felt that in the light of the prevailing bearishness in the international coal market, spot purchases were economical.

This situation, however, may not continue for long. Right now there is a tendency for prices to firm up. The continuing embargo on South African coal imports by several Western countries accentuates this trend. So there is much to be said in favour of long-term contracts, as steel plants in Japan, South Korea and other countries have realised. Nippon Steel of Japan, for instance, has a 12-year contract with Pittston Coal Exports of the US which also provides room for year to year adjustment in prices and quantity. Pohang Iron and Steel Company (POSCO) of South Korea which has been running the Tanoma mines in Pennsylvania in the US has now decided to sell it to an American coal company which in turn will have a 10-year contract to ship US coal to POSCO. Long-term contracts, including long-term lease holding of coal mines, are common in the international coal industry and there is no reason why India should not have them too. India may not be a big buyer, but it is not a very small one either, for many other countries buy much smaller quantities. Before prices make a further upswing, India should seek such long-term pacts and avoid as far as possible spot market purchases.

Side by side, it should also explore the possibility of finalising a deal with China which has entered the global market in both metallurgical and steam coal in a big way. According to latest market reports, Chinese offers have been quoted at US $ 39 to $ 44 per tonne of coal with an ash content of 11 per cent and 23-27 per cent of volatile matter. This compares well with New South Wales coal with 10 per cent ash content and 21-24 per cent volatile matter now being offered at around US $ 46 per tonne. For US coal, the price now ranges between US $ 49 and $ 52 per tonne, though its ash content is lower at 7 to 9 per cent.

Chinese exports should also have a lower freight cost because of the shorter distance involved in moving the coal. It may thus prove worthwhile to explore the possibility of having such a deal with China. India's production is less than one-fifth of China's and it certainly does not have all the varieties that its northern neighbour has. But these are not the only reasons for the dismal performance of India's exports now restricted to only a few neighbouring countries.

Courtesy: The Economic Times.

CIL may come out of woods by next year

Coal India Ltd. (CIL), which has accumulated a staggering loss of about Rs. 2,000 crores, is likely to turn the corner by next year.

Speaking to "Financial Express" the CIL Chairman, Mr. G.L. Tandon said at Bombay on May 19th, that various measures are being contemplated to improve the operational efficiency and reduce costs while increasing production. Exuding confidence about taking CIL out of the red, Mr. Tandon said a proposal has been forwarded to the Centre for effecting three major changes which would place CIL on a firm footing.

Listing the changes to be effected, Mr. Tandon said rationalisation of labour is of prime importance. This is to be followed by a letter of credit arrangement and a hike in the price of soft coke, a secondary product of coal, which has not changed since almost seven years.

He attributed the maladies of the company to underutilisation of huge and old labour force and the increasing interest burden owing to large outstandings due from consumer units. He said outstandings with user units amounted to over Rs. 1,200 crores of which Rs. 900 crores was from State Electricity Boards. With the letter of credit arrangement to come into force, loss on interest burden could be greatly minimised. Similarly, CIL is losing around Rs. 200 per tonne on soft coke as its price was not increased even when the change was effected in the coal prices almost seven years ago, he said. In absolute terms, loss from the sale of soft coke is around Rs. 50 crores every year, he said.

As a result of various economy measures, loss per tonne on coal would come down and be wiped out from next year, according to Mr. Tandon.

In pursuit of making CIL a profitable enterprise, he observed that the entire loan amount of about $ 750 million approved by the World Bank had already been spent on various projects. These projects will also help in steering CIL out of red. The World Bank loan was spent on Dudichua open-cast mine of the Northern Coal fields, Jharia and Pootkee Bullihari Collieries of BCCL, Gevra opencast of the South Eastern Coalfields, besides Singareni Collieries.

Commenting on the quality of the coal, he said one should take note of the fact that superior grade non-coking coal reserves in the country is less than 10 per cent of overall coal reserves. However, he said, efforts are being made to upgrade the coal with the installation of updated coal handling plants.

About coal pilferage he agreed that much needs to be done. In this context, he said CIL has undertaken a programme of providing electronic print-out system at all the new weighbridges as well as the existing weighbridges which would avoid misunderstanding on account of human error.

Regarding environmental problem he said CIL has now come out with environment management plan which takes care of all aspects right from afforestation to rehabilitation including restoring the top soil after mining is over.

GROWING OPEN-CAST COAL MINING

ABE study warns of adverse effects

A recent study commissioned by the Advisory Board on Energy (ABE) has drawn attention to the undue emphasis being placed on opencast coal mining, disproportionate to reserves, which has adverse implications for the coal sector.

The study made on behalf of the ABE by Mr. K.S.R. Chari, former coal secretary, Government of India, noted that all easily mineable opencast prospects which were picked up now would lead to lopsided growth, as the country reportedly has only 28 per cent of coal reserves being amenable to opencast mining.

The study warned that the enormously increasing demands in future would force the country to depend more on underground mines which could not be as "productive" as opencast mines. As such, the need of the hour, according to the study, was "a slower but sustainable rate of growth for coal production through an appropriate mix of opencast and underground mining projects.

The study alleged that there was "deliberate neglect" of underground mining as a result of which the supply of superior grades of coal has been dwindling.

Noting that the tasks attendant on attaining a mammoth production level of 417 million tonnes of coal by the year 2000 AD, or 512-520 million tonnes by 2004-05 AD as "formidable," the study deplored that the growth rate necessary to reach the required levels of output year after year, according to the present plans, was such that it could not "possibly be achieved nor can it be sustained."

"Unless radical measures are initiated forthwith to improve production and productivity through increased capacity utilisation, even drastic changes in the procedures for sanctioning projects and implementing them, cannot help these goals being achieved," the study conceded.

The study said the failure of Coal India Limited (CIL) to make available the coking coal needed by the steel plants in quantity and quality, despite massive investments made in coal mines and washeries under it, was "a tragedy."

The study said CIL's failure in this regard had resulted in SAIL taking recourse to imports that threatened to become "a permanent feature of the economy."

The study noted that "it could well appear that import of the total needs of prime coking coal might be a tempting answer to all the problems" plauging the Jharia Coalfields today.

What is "amazing," according to the study, is that the government should have convinced itself so easily about the imperatives of long-term coking coal imports so as to make a commitment to provide, year, something like Rs. 300 crores in foreign exchange.

The study said quality base for statistical reporting should be in terms of standard coal.

By not prescribed the targets in terms of tonnage, quality and cost, the coal companies, being goaded to achieve the targets in terms of tonnage of production "at any cost and in spite of mounting stocks." were causing damage to the economy, the study said.

The study pointed out that the major constraint CIL would be facing in achieving the target of 196.3 million tonnes by the end of the Seventh Plan, and sustaining the required rate for meeting the challenges by the turn of the century, mere delays in getting land (forest land as well as tenancy land), inadequacy of sand for stowing, non-availability of adequate power, delay in supply of major equipment and procedural delays in environmental clearances and sanctioning investment proposals.

"In a forward to this study, ABE chairman, Mr. B.B. Vohra said though average coal prices had been periodically raised from Rs. 49 per tonne in 1974 to the present Rs. 219 per tonne, CIL had been "chronically in the red" and had piled up cumulative losses of around Rs. 2000 crores by the end of 1986-87. As such, the study said, "decontrol" of coal had certain "positive aspects" that might commend its adoption.

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Bunching of collieries hits supplies

The bunching of Haldia-bound collieries at the sandhead has been causing concern to the port authorities, shipowners and the Tamil Nadu Electricity Board which is the major importer of coal through Haldia. On several occasions in the past one month, the collieries were stranded at the sandhead as there was no coal at the dock. As before, the railways and the coal authorities blamed each other for the situation.

Coal ships had to wait at the sandhead for as long as seven days to get the berth at Haldia as the ships which had arrived earlier at the dock could not finish loading due to non-availability of coal. At a certain point in time as many as six ships were found waiting for coal to arrive at the dock in sufficient quantities.

While the dock is geared to receive 10,000 to 12,000 tonnes of coal equivalent of five to six rakes a day, not more than three to four rakes arrived a day on an average in the past several weeks. As a result, the ground stock built up earlier was totally depleted and no new stock could be created. The port sources feel that at least 50,000 to 60,000 tonnes of ground stock is necessary if the schedule of coal shipment is to be maintained uninterrupted.

Coal supplies to Haldia dock have dropped at a time when the linkage committee of the government of India, after satisfying itself of the performance of Haldia dock. has stipulated that the dock should handle as much as 3.5 lakh tonnes of coal a month right now.

The reasons for such a stipulation are two fold. First, railways will not be able to meet the increased requirement of coal for industries located in the southern parts of the country, hence, larger coastal movements of coal have become imperative. Second, the coal handling capacity of the Haldia dock too is steadily increasing.

The iron ore berth, lying idle for many years due to the lack of ore traffic, is being modified to handle coal so much so that port authorities have been told to get the coal berth equipped for handling as much as five million tonnes of coal annually by the end of this year.

But then getting the coal berth ready for handling larger quantities of coal is not enough. The gearing up of operations is also needed in other sectors such as coal mines, railways, shipping lines and at the discharging port. Any disruption in any one of these sectors might jeopardise the entire operation of coal shipment, no matter how efficient the working of the dock and how pious is the wish to the government.

New products & processes

Alkyl Amines Chemicals Limited, 401-407, Nirman Vyapar Kendra, Plot No. 10, Sector 17, DBC, Vashi, New Bombay-400 705 has developed three Specialised Corrosion Inhibitors for Industrial applications:

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These products are marketed under the brand name ALCHAN by the Company.

DATA TERMINAL

A range of intelligent terminals designed for data collection and display in factories and workshops has been launched by a British company (Source Computer Systems Ltd., Aston Science Park, Love Lane, Birmingham, England B7, 4BJ).

The 400 Series from Source Computer Systems is designed for use with existing computer systems employed in time-and-attendance and machine monitoring, job costing, job tracking and security access.

The terminals are available with a choice of keyboards: numeric with six function keys, full alphanumeric with eight function keys, and a specific time-and-attendance keyboard. Other input facilities include a barcode reader slot or wand, RS 232 direct digital and analogue inputs and high-security readers. Outputs include inbuilt alphanumeric displays, audible warnings by buzzer, RS 232, digital outputs and a clock driver.

Each terminal can store up to 24,000 characters in a battery-backed memory. An open bus structure allows the incorporation of alternative input and output options and extra memory or special processor cards. A software programme can be supplied which allows the terminals to be configured to individual requirements.

All terminals are enclosed in rugged, temperproof casings and have inbuilt power supplies. Membrane-type keyboards are used to ensure good service in harsh industrial environments.

COMPACT RIG

Ingersoll-Rand has introduced a new hydraulically operated, compact, mobile, lightweight multipurpose rig, model ITH-5. for use in waterwell, mining and quarrying applications. The rig is designed for DHD drilling and has the following capacity:

165 mm (6-1/2") holes in soft/medium hard consolidated overburden formation upto 30 m (100') depth. Drilling to geater depths is possible.

The light-weight and compact size of the drill module has been specially designed to offer the contractor a choice of chassis to mount the drill module on. The drill module can be mounted on a jeep, light commercial vehicles (LCV), truck or trailer, making it possible for the ITH-5 to move with ease over rough terrain and in rural, inaccessible areas which can otherwise not be reached by other heavier drilling rigs.

The drill module has a hydraulic top head drive with speed variation of 0.75 rpm and a floating action. The module comes equipped with a complete hydraulic system, 4 levelling jacks, water injection system, lubricator, centraliser and a centrally-located control console.

20 PC FALL IN PRODUCTION :

reliance on zinc imports to rise

The actual zinc production in the country during 1986 87 was 76,366 tonnes, which is estimated to have come down to 60,900 tonnes in 1987-88, recording over 20 per cent fall. The drop has been largely due to water and power shortage in the producing areas, thus increasing reliance on imports to meet the growing demand for this vital metal.

The government-owned Hindustan Zinc Limited (HZL) produced 66,378 tonnes of zinc during 1986-87, which is estimated to have provisionally suffered a sharp set back at around 48,000 tonnes during last year due to acute water and power shortage in Rajasthan. In the private sector, Cominco Binani Zinc Limited produces zinc from imported concentrates at their Alwaye (Kerala) plant with a production capacity of 14,000 tonnes. Its zinc production is estimated to have increased from 9,988 tonnes in 1986-87 to around 12,600 tonnes last year.

The 1988-89 production target was fixed at around 72,000 tonnes, with around 60,000 tonnes production by HZL and 12,000 tonnes by Cominco Binani. Taking into account the acute water and power situation in Rajasthan, it appears that the target of zinc production by HZL for 1988-89 may be scaled down to 57,000 tonnes, worsening further the indigenous supply position during the current year.

According to the assessment of the working group for the Seventh five-year Plan, the demand for zinc and lead in the country is envisaged to grow at annual compound rates of about 4.5 per cent for zinc and 5.5 per cent for lead upto 1989-90 and 4 per cent and 5 per cent, respectively, thereafter. With these growth rates, the annual demand for zinc and lead will increase to 2.41 lakh tonnes and 1.30 lakh tonnes respectively, by the turn of the century from the existing level of 1.49 lakh tonnes and 79,000 tonnes, respectively. The lead production by HZL during last year is estimated at 20,400 tonnes and by Indian Lead Private Limited at around 12,000 tonnes. The gap in the indigenous zinc and lead production is being met by imports of concentrates and metals.

The total zinc and lead identified resources in the country are around 360 million tonnes. Out of this 157 million tonnes averaging 2.20 per cent lead and 8.31 per cent zinc are the mineral/ore reserves in mining/development stage with recoverable metal availability of 6.9 million tonnes of zinc and 1.7 million tonnes of lead. Remaining 203 million tonnes are in the category of conditional resources with an average of 1.77 per cent lead and 2.43 per cent zinc.

The bulk of lead-zinc deposits occur in Rajasthan and are under lease/exploitation of HZL. The best ever multi-metal deposit discovered in India for zinc, lead and other associated metals is Rampura-Agucha in Bhilwara district of Rajasthan. It has estimated ore reserves of 30.35 million tonnes containing 13.48 per cent zinc and 1.93 per cent lead metals.

Integrated project proposal for development of Rampura-Agucha and Chanderiya smelter is under active consideration of the government. An amount of Rs 21 crores has been sanctioned by the government with a foreign exchange component of Rs 14.70 crores for commencement of work on Cosunda Dam, preparation of environment management plan and cost estimates.

The UK/India Hindustan Zinc Aid agreement signed last year offers grant-in-aid upto £ 55 million to cover substantial cost in the form of offshore supplies and services from the UK and proportionate local costs in rupee equivalent upto £ 18.3 million for Indian supplies for Rampura-Agucha mine and Chanderia smelter project.

HZL, incorporated in 1966, started with a 500 tonnes per day mine at Mochia in Zawar in Udaipur district of Rajasthan and 3,600 tonnes per year lead smelter at Tundoo in Bihar. In addition to the primary metals of zinc and lead, the production profile of the company includes by-products such as cadmium, silver, sulphuric acid and phosphoric acid.

Since the beginning of the 1987-88, HZL was faced with water scarcity at Debari smelter because of failure of monsoon in Rajasthan and also power restrictions at Debari and Vizag smelters. This had adversely affected zinc metal production. Against actual ore production of 15.33 lakh tonnes of ore during 1986-87, the production in 1987-88 is estimated around 16.5 lakh tonnes and that of concentrates at 1.36 lakh tonnes and 1.57 lakh tonnes, respectively. However, the metal production during the same period declined sharply from 86,312 tonnes in 1986 87 to an estimated 68,400 tonnes in 1987-88.

INDUSTRIAL WASTES DUMPING IN AFRICA DECRIED

African leaders have condemned industrial wastes in Africa and said they would push for a UN resolution against the practice.

"The dumping of nuclear and dangerous industrial waste in Africa is a crime against Africa and the African people," the Organisation of African Unity said in its own resolution adopted by heads of State during the second day of their three-day summit.

The OAU resolution was sponsored by Nigeria, also the mover behind the call for a UN resolution.

"We will make an appeal to the conscience of the world," the Nigerian Foreign Minister, Mr. Ike Nwachukwu, told reporters. "All Africa feels strongly about it."

Privately, Nigeria and other African States chastised some of their fellow OAU members for agreeing to take industrial waste in return for millions of dollars.

The resolution appealed to African countries which have signed such agreements to abrogate them and those still negotiating to break off talks.

IRE UNIT TAKES UP PROJECT

The Manavalakurichy unit of the Indian Rare Earths Ltd (IRE) has taken up Rs. 8-crore project for modernising the minerals processing techniques to augment production of monozite, ilmenite, zircon and rutile.

The unit Manager, Mr. B. Govinda Pillay, said that the dredging and wet concentration plant (DWCP) would be modified to get 90 per cent heavy minerals grade and the precon plant modified to upgrade the sand to plus 95 per cent HM grade concentrate.

COMPANY NOTES

AGRO-CHEM. DIV. BOOSTS CIBA GEIGY'S EARNINGS

Contrary to popular belief, Hindustan Ciba Geigy's operations are not restricted to pharmaceutical sector only.

In fact, pharmaceutical division accounts for only one fourth of the total turnover of the company. Agricultural chemicals' division constitutes 53 per cent. Consumer products like toothpaste (marketed under the brand name 'Cibaca') tooth powder, laxatives and 'Araldite' (fastener) make up for 15 per cent. Dyes, textile auxiliary products and plastics together form the balance.

It is precisely this diversified nature of activities encompassed by the erstwhile multinational FERA company that has enabled it to maintain a steady growth over the years and also ensure a reasonable return to its shareholders.

In the 40th year of its operations ended December 1987, the company has reported an impressive rise of 13.2 per cent in its turnover which has gone up to Rs 176.79 crore from Rs 156.16 crore. This is in sharp contrast to the poor performance reported by most of the other 'diversified' drug companies during the year.

What is more, this rise in income has been accompanied by an increase of nearly 42 per cent in the gross profit. (Rs 17.83 crore as against Rs 12.60 crore). As a measure of performance, the gross profit in relation to net sales has gone up to 10.4 per cent from 8.3 per cent in 1986 and 10 per cent in 1985.

Net profit, at Rs 6.76 crore, also shows a rise of nearly 29 per cent despite the higher statutory provisions. This all-round improvement in sales and profitability has induced the directors to propose a higher dividend of 20 per cent as against 18 per cent in the previous two years. Despite this higher outgo (Rs 3.54 crore against Rs 3.19 crore), the dividend payout ratio is lower at 52 per cent as against 61 per cent.

The sterling performance put up by the agricultural chemicals division largely contributed to the company's growth during the year. In spite of the prevailing drought, income from this division went up markedly by Rs 11 crore to Rs 58.41 crore, crossing the 50-crore mark for the first time.

The copious rainfall in south India in the last quarter of the year coupled with the heavy pest attack in the cotton areas, especially Andhra Pradesh, also contributed to the increase in demand for the company's pesticide products.

Income from pharmaceutical division also went up by five per cent to Rs. 46 36 crore. The consumer products division's income, however, went down to Rs. 27.24 crore from Rs. 30.91 crore. The reported controversy created against the use of flouride toothpaste by competitors affected the sales of its toothpaste.

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The dyes division recorded a growth of 23 per cent on top of a 44 per cent growth recorded in the previous year. This was mainly due to the increased sales of 'Syntans' by the leather industry. This, incidentally, is produced at the company's new plant at Santa Monica, Goa.

The plastics and additives division, too, showed good progress with income going up to Rs. 32.42 crore from Rs. 26.28 crore.

Earning from exports, however declined by almost 25 per cent to Rs. 8.15 crore from Rs 10.61 crore in 1986. The export earnings have been going down steadily over the years. In 1983, the income from exports was Rs. 17.02 crore, in 1984 it rose to Rs. 17.26 crore, and in 1985 it was Rs. 13.03 crore.

The total expenses of Rs. 155.59 crore in relation to the sales have gone down to 90.9 per cent from 92.8 per cent. This is despite the fact that personnel expenses have gone up by nearly Rs. 2.77 crore to Rs. 18.74 crore. This is roughly 12 per cent of the total expenses. Material costs have more or less remained unchanged at Rs. 91.49 crore against Rs. 69.12 crore.

Thanks to competition and the increased margins allowed under the new Drug Price Control Order 1987, the company had to pay higher commission, discounts and rebates to its distributors, aggregating Rs. 20.77 crore, as against Rs. 16.31 crore.

Interest charges, on the other hand, declined to Rs. 97 lakh from Rs. 1.62 crore following lower borrowings, especially on the short-term account. The total borrowings as at the end of December was reduced to Rs. 4.50 crore from Rs. 8.68 crore. The reduction in inventories by about Rs. 6 crore to Rs. 21.58 crore was, however, offset by the rise in sundry debtors which went up by a little to Rs. 22.01 crore as at the end of the year.

Out of the gross profit of Rs. 17.83 crore, a sum of Rs. 6.14 crore has been set aside towards depreciation as against Rs. 4.33 crore provided in the previous year. The higher average has been necessitated by the enhanced rates prescribed by the competent authorities. The rise on account of this change has been to the extent of Rs. 1.99 crore. Provision for taxation is also higher at Rs. 4.93 crore as against Rs. 4.33 crore

The net profit in relation to the net sales has improved to 3.9 per cent from 8.5 per cent in 1986 and 4.8 per cent in 1985. The return on net worth, at 13.7 per cent, though better than the previous year's 11.3 per cent is below the 1985's mark of 15.2 per cent. The return on the total funds employed is 12.5 per per cent as against nine to five per cent in the previous year.

The reserves of the company as at the end of the December 1987 stood at Rs. 31.79 crore against the share capital of Rs. 17.71 crore, thus indicating a bonus in the near future.

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The net block is valued at Rs. 19.69 crore. The diversification and expansion plans include the manufacture of hardeners for EPN resins at its existing plants. The company has already received a manufacturing licence for the same. In the consumer product division, the company plans to introduce high quality photo products.

Meanwhile, the directors of the company are exploring the possibility of diversifying into related fields of dyes products.

The Rs. 100 paid-up share is currently being quoted at Rs. 490 on the Bombay Stock Exchange.

PETROFILS EXPANSION PLAN

Petrofils Co-operative Ltd., a joint venture of the government of India and Weavers Co-operative Societies, has embarked upon an ambitious expansion and diversification programme involving an outlay of about Rs. 196 crores in the next few years.

Of the three major projects envisaged by the company the nylon-6 filament yarn project with a capacity of 6,000 tonnes per annum would be located at Valia in Bharuch district in Gujarat.

The estimated cost of the project is placed at Rs. 74.35 crores and the plant is expected to be ready for commissioning by March, 1990.

According to informed sources the foreign collaboration tie up and capital goods import programme for the project have been already cleared by the government recently. Tending for the main plant buildings have been done and the construction work is expected to commence shortly.

The second project of Petrofils for the manufacture of 3,000 tonnes of spandex yarn per annum would also be set up at Valia in Gujarat. This project is expected to cost about another Rs. 35 crores.

The sources said that all the necessary government clearances have been obtained for this project. It is expected that the project would be ready for commercial production by September, 1990.

Petrofils would also be undertaking a project for the manufacture of 15,000 tonnes per annum of polyester filament yarn shortly. The estimated outlay for th project is Rs. 87 crores. The fi stage clearance for the proje from the government has be already received. Technical a commercial feasibility studies f the project have been carried ou

Petrofils Co-operative Ltd. w probably the first organisation introduce the usage of polyest filament yarn in the handloo sector. There are thus ov 12,000 handloom weavers fam lies producing 16 million m tres of handloom polyester fa rics like sarees, shirtings, su ings, dress materials etc.

ABNER PHARMACEUTICALS STARTS PRODUCTION

Abner Pharmaceuticals Ltd which entered the capital mark last year for the production bulk drugs like pyrazinamid propranolol HCL and tinidazol with an equity participation wi UPSIDC, has started commerci production. The factory is situ ted at Dadra district, Ghaziaba a notified 'C' class backwar area, near Delhi.

The above mentioned bul drugs are the basic materials f manufacturing several medicine for tuberculosis, heart disease hypertension and amoebiasis.

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Highlights in Chemical Technology (Part 1)

RY CELL BATTERIES WITHOUT ERCURY DEVELOPED IN RANCE

France's Wonder Co. has recently eported the development of a line f dry cell batteries in which mercury replaced by a fluorinated polymer. hey are the first batteries anywhere o use no mercury, the Company laims. Paper impregnated with the olymer together with a surfactant ade by Atochem and trade named orafae, protects the zinc electrode gainst corrosion, replacing mer- ury, now used for the purpose.

The advantages cited for the new Green Power group of 1.5 volt bat- eries are that they will not cause nvironmental damage by release of nercury, when discarded after use. Moreover, the Company claims they rovide up to 3 times longer per- ormance life in continuous use than conventional zinc carbon cells.

Using the same technique, Wonder Company is reported to ave developed alkaline batteries herein the mercury content is educed by a factor of four, and the company's researchers aim to bring t down further in the near future.

DIGITAL PAPER -- A NEW COMPUTER STORAGE MEDIUM DEVELOPED BY ICI ELECTRONICS

ICI Electronics, one of UK's major international business groups, has recently developed a flexible optical data storage medium, which is reported to be cheaper and easier to handle than conventional rigid media.

The medium called digital paper, is a polyester based substrate, typically 25 to 75 microns thick, which has been coated with an infra-red absorbing dye polymer and protected by an overcoat. Preformatting, reports ICI, can be achieved by embossing in the dye polymer layer.

Digital paper has a number of advantages over rigid media. It is produced continuously on a web in a roll so less material is used and is easier to handle. Creo, a Canadian firm and Bernoulli Optical Systems, (Boulder Colorado, USA), have each developed drives based on this ICI system.

ICI believes that the above development will lead to a new generation of computer storage peripherals and is already in discussion with a number of different manufacturers. Digital paper is the second product to be launched from ICI Electronics.

The first, dye diffusion thermal transfer printing materials, which allow full colour photography quality prints to be output directly from an electronic source, was unveiled last September. (*ECN,* 2/22/88, p. 23).

A NEW THERMOPLASTIC AROMATIC POLYAMIDE RESIN UNVEILED BY MITSUI PETROCHEMICAL

Mitsui Petrochemical Industries has recently unveiled a new thermoplastic aromatic polyamide resin called MCX-A, which is resistant to temperatures up to 320°C. MCX-A is a compound resin made mainly from thermoplastic aromatic polyamide resin with glass fibres to add strength.

The company researchers expects that the new material will be used as the base for parts enveloping car engines. The commercial scale plant will be built in Japan and the company will be marketing the product in Japan, Europe and the USA by 1989. (*ECN,* 2/22/88, p. 23).

ORGANIC MAGNETS ON THE HORIZON

The first polymer magnet to display magnetic properties has been presented to the London Science Museum by the Soviet developer Prof. Ovchinnikov of Moscow Institute of Chemical Physics.

The preparation of the organic ferromagnet was reported for the first time in *Nature,* (1987, 326, 370). Various polymers have been shown to be similar to metals in conducting electricity and possessing superconductivity. This is the first time that ferromagnetism has been demonstrated.

The Russian researchers have based their magnet on a polydiacetylene backbone with stable radicals as side groups. The backbone comprises a sequence of alternating double-single and treble-single carbon-carbon bonds (c=c-c=c=c).

This backbone is stabilised with nitroxyl biradical side group. The resulting polymer behaves as a ferromagnet with a Curie temperature about 150°C sufficient to make the compass needle that was presented to the Science Museum. It will be some time, however, before organic ferromagnets replace traditional materials. (*Educ. In Chem.,* 1/1988, p. 3).

A NEW PEROXIDE PULP-BLEACHING SYSTEM UNVEILED BY DOW CHEMICAL

Dow Chemical (Midland, Mich.) has recently marketed a new hydrogen peroxide bleaching system for mechanical pulps. The system is made up of two chelating agents. One is a pretreatment chemical, the other a bleach stabilizer. The pretreatment chemical removes the metal ions that are found in all wood pulps, thereby permitting the peroxide bleach liquor to perform with greater efficiency. The peroxide stabilizer replaces the sodium silicate that is used in some systems, avoiding the potential for scale build-up on equipment. To help market the new system, Dow has formed an analytical service called Metal Signature.

Depending on bleach process and type of ion contamination, Dow specialists may recommend one of the company's Versene or Versenex chelating agents to control metal ions that otherwise would adversely affect the bleaching process. (*Chem. Wk.* 3/9/88, p. 17).

MAJOR GROWTH FOR CARTRIDGE FILTERS FORESEEN IN THE USA

Sales of cartridge filters in the USA are growing at more than 15% per annum and are expected to break the $100 million per year barrier by 1990, according to a recent report from Melivaine Co. The report points out that the cartridge filter has transformed the fabric filter industry and their smaller size and low-cost, have made them the preferred choice in chemical, pharmaceutical and other applications. Cartridge filters are very much an American development. Torit, a division of Donaldson was the originator. Farr is another strong contender. These two companies have more than 50% of the market. Other active companies include American Air Filter, Bact Engineering, Dollinger, Dynamic Air, W.L. Gore, Mikroful, Scientific Dast Collectors, TDC Filter and Wheelabrator. W.L. Gore has recently introduced an innovation, the "membrane cartridge filter", offering efficiency and better cake release performance.

Early in-roads were made by the filter in the chemical and pharmaceutical industries. They have also proved popular with the paint and pigment industry. With improvement in cartridge cleaning techniques and temperature-resistant media, the filter can be used in a variety of sand handling and metal applications. Conventional air pollution control is not the largest single application. That is reserved for prefiltration in gas turbine intakes. This market alone accounts for $15 million per year. The sale of replacement cartridges accounts for 35% of the total market.

They are finding increasing use as a replacement for woven and felted bags in existing pulse jet and shaker collectors. Their use of pleated fabric gives a great deal more filter surface. Such a replacement can increase total air flow by 50%. Cartridge filters, however, are not everyone's godsend, they are more difficult to clean and their use in sticky applications, where they have failed, have given them some negative publicity. For further information and copy of the report contact: The Mclivaine Company, 2970, Marie Avenue, Northbrook, Ill. 60062, USA.

AIR PRODUCTS PIONEERS EUROPE'S FIRST LIQUID HYDROGEN FACILITY

Air Products has commenced in December 1987 Europe's first 5 tonne/day liquefier for hydrogen at Rozenbury in the Netherlands supply liquid hydrogen to contine tal Europe and the UK.

Liquid hydrogen offers adva tages over the gaseous product terms of purity (better than 99.999 and storage costs. Much of th demand for high-purity liquid hydr gen comes from the electroni industry. Air products expects to b supplying electronics-grade produ to 4 or 5 European countries by th end of 1988. Outside the electroni field, the Company aims to offer spot delivery service to large use of hydrogen, such as refinerie when their own gaseous hydrog production plants are out of servic

Air Products pioneered liqu hydrogen production in the USA building three plants to supply th NASA in the late 1950s. To supp customers in Europe, from the ne facility, the Company still uses own fleet of specially designed cry genic road tankers (of 70 tonn liquid hydrogen storage capacity built at the company's manufacturi works.

Specially designed liquid-nitrog shielded cryogenic containers, ma ufactured by Air Products, Gardn Cryogenics subsidiary, will be us for cross-channel transportation the UK. (*Chem. Engr.*, 12/1987, p.

DU PONT UNVEILS A NEW SUPERCONDUCTING CERAMI

Researchers at Du Pont hav recently developed a superconduc ing ceramic comprising of an oxi of bismuth, strontium, calcium ar copper. The ceramic is reported be more stable than other superco ductors already developed ar achieves superconductivity -242°F. A patent application ha been filed. The researchers clai that the new compound is mo stable in the presence of water ar

carbon dioxide and may prove easier to handle. (*ECN*, 2/29/88, p. 24).

EXCIMER LASER A NEW AGENT FOR STERLIZATION OF FOOD PRODUCTS

Wine sterilization is one of the newest application currently being investigated for the excimer laser. Once used purely for scientific research, the excimer laser, a powerful pulsed U-V light source, is rapidly emerging as an important tool for industrial and commercial applications. Recent experiments by Lambda Physik of West Germany have shown that the excimer laser light can kill off the bacteria in yeast bugs present in wine, without affecting its taste. The common technique for sterilizing wines is to add sulfur dioxide, but unfortunately, the more the sulphur dioxide is added, particularly to red wines, the more likelier the drinker is to suffer headache or other side-effects.

Lambda researchers at the Gottingen Laboratory of Lambda Physik have found after experimentation that the U-V light of the excimer laser, at a pulse frequency of 200 shots per second, is as effective as sulfur dioxide for sterilization. The effective penetration depth of the laser into a wine is 1-2 mm, so it takes about one minute to sterilize one litre of wine flowing through a 2 mm diameter glass tube. Further information is available from Coherent (UK) Ltd., Cambridge Science Park, Milton Road, Cambridge CB4 4FR. (*Intl. Bottler & Packer*, 4/1987, p. 8).

A NEW EMULSIFIER CONVERTS HEAVY OIL INTO FUEL

A major source of combustible fuel for industrial and utility use is the bottom-of-the-barrel oil that remains after cracking and distillation have extracted higher-value fuels. In order to make a No. 6 oil that is suitable for burning in boilers, however, the heavy product must first be diluted with more expensive No. 2 oil.

Now a small Florida-based company in USA has developed a proprietory emulsifer that may permit the burning the heavy fuel without blending. Petrofirm (Fernandina Beach, Florida, USA) has developved a proprietary produce "Pre-atomized fuel (PAF)". The company claims this breakthrough promises to extend the stability of emulsions from hours to years.

Petrofirm PAF is the first new technology brought to the heavy fuel oil market in 30 years. The new process is outlined in US patent 4,618,348 (Oct. 21, 1986). Patents are pending in the chemical additive (emulsifier) which the Company describes only as a biopolymer. The process will convert the world's heavy hydro carbons and difficult refinery by-products into cumbustible fuels. It promises fuel and operational cost savings to big fuel users.

The company's PAF product is produced by emulsifying crude oil or residium product with water. The resulting oil droplets are only 5-10 microns in diameter. This droplet size is the key to the product's combustion performance.

Generally, liquid fuels are atomized as they are sprayed into a combustion chamber. Because, a hydrocarbon burns only at its surface, the most efficient fuel is the one that has the maximum surface area. The oil droplets in PAF are said to be one-thousandth the size of the droplets of No. 6 fuel oil. Consequently, PAF burns more efficiently, more cleanly and with lower levels of particulate emissions than No. 6 fuel oil. Moreover, it emits less nitrogen oxide.

The first commercial application of the process will come with a licensing agreement with Stuart Petroleum (Washington DC) an East Coast market and terminal operator for refined petroleum products. Stuart plans to make and market the product as a replacement for No. 6 fuel oil.

In pumping heavy oil from the well, currently a principal method is to dilute the heavy crude oil with low-viscosity "cutter stock" to ease pumping the oil to the surface. But that process is relatively expensive because the light cutter stock is more costly than the heavy crude or the resulting mixture of light and heavy oil.

The company figures that Petrofirm's downhole emulsification technology can do the same job at lower cost. The process has already been tested extensively in Texas and Canada. When water and the company's specialty chemicals system are injected into a formation the crude oil mixes with water to form an emulsion that can be pumped from the ground. As in the refinery application, the result can be accomplished with existing equipment.

Tests in a pipeline system using an emulsion made with Petrofirm's chemical formulations have shown that the emulsion remain stable even when pumped for several days over hundreds of miles. At the refinery, the heavy oil can be separated from the water by using conventional emulsification processes. (*Chem. Wk.*, 2/4/88, pp 24-25).

HEIGHTENED INTEREST IN DIMETHYL CARBONATE AS A SUBSTITUENT FOR TOXIC PHOSGENE

Heightened interest in substituting dimethyl carbonate for toxic phosgene is encouraging Enichem Sud

tesi (Milan), the fine chemicals division of Enichem to expand production of its prototype unit at Ravenna by 3000 tonnes/year.

Enichem's proprietary route make dimethyl carbonate (DMC) by oxidative carbonylation of methanol. Carbon monoxide, methanol and a controlled amount of oxygen react over a copper-based catalyst in a slurry, at a pressure of under 30 atm. and a temperature around 100°C.

Enichem is promoting DMC as a safer, cost effective replacement for phosgene in production of isocyanates and polycarbonates. Besides safety, DMC offers an added benefit. The byproduct generated is methanol, which is less hazardous and easier to recycle than hydrochloric acid, the waste produced when phosgene is a reactant. While DMC-based reactions need a catalyst and higher operative temperatures to proceed than the phosgene ones, Enichem reckons that the same down-stream separations units can be employed. (*Chem. Eng.* 3/14/88, p. 17).

A NEW SPECIALTY FIBRE FROM HOECHST-CELANESE

Production and commercial availability of developmental quantities of multifilament polyetherimide (PEI) fibers was reported last March by the specialty fiber products unit of Hoechst-Celanese Corporation's industrial fibre group.

The fibres are being produced from General Electric company's 'Ultem' resin. PEI fibres are intended for use as a matrix material for reinforced plastic aerospace composites as well as for general industrial uses requiring resistance to high temperature and fire.

Yarns of PEI fibres co-mingled with glass and other reinforcing fibres will be offered in the near future.

Hoechst-Celanese specialty fibre products market development manager A.R. Van Landingham reports 'PEI products will greatly enhance industry's efforts to develop thermoplastic composite parts, particularly in complex shapes, in support of improved material processing. (*CMR*, 3/14/88, p. 4).

* Rhone-Poulenc has taken a majority stake in Spain's Silicones Hispania in a move aimed at optimizing its existing activities in the production and commercialization of silicones. The French firm increased its stake from a previous holding of 25%. The company is looking to shed some of its 14 Spanish affiliates and subsidiaries to focus more heavily on the chemicals and agrochemicals sector.

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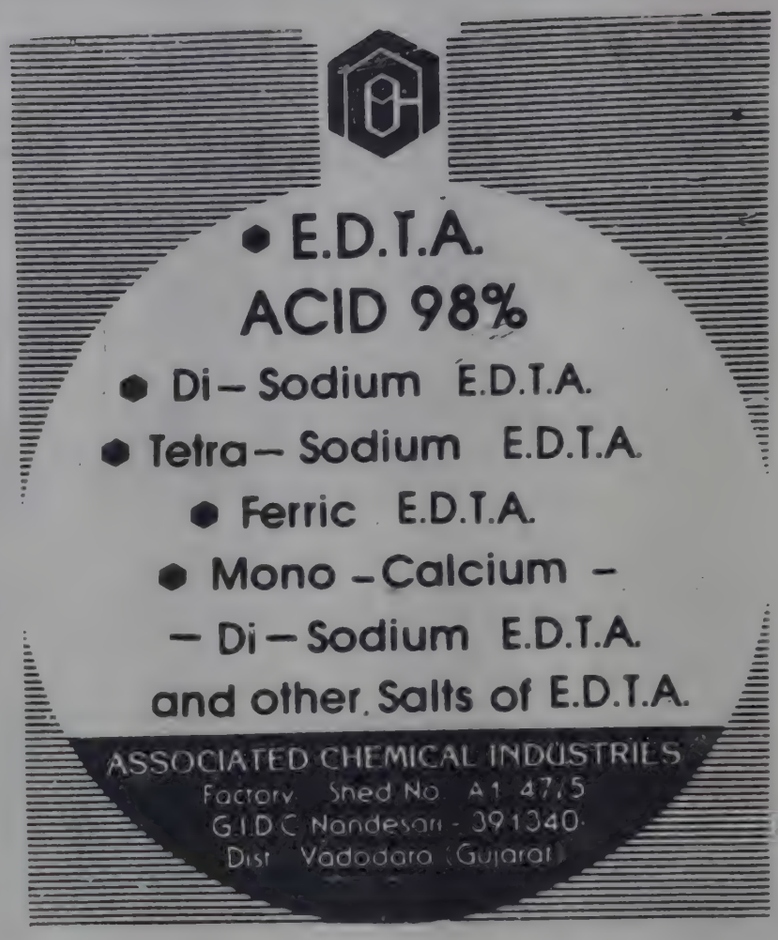
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Technical Innovations in Recycled Rubbers*

S.S. AZAD
S.S. Azad & Associates, Rubber Consultancy Services, Bombay 400 051.

SYNOPSIS

"Recycled rubbers -- reclaimed rubbers, powdered ubber, rubber crumbs, devulcanised rubber, depolymerised rubber etc. consitute essential compounding ngredients in rubber science and technology. In view of our tremendous efforts to conserve energy and to combat the imminent oil crisis have brought senior technologists and industrial consultants of the world over to undertake joint endeavours in utilising wastes into economically viable wealth.

Our subject has, by and large, been highly appreciated amongst industrial consultants as regards the distinct advantages, having been made available through the judicious applications of rubber products -- adhesives, sealants, anti-vibratory shock absorbers, besides of course the automobile tyres and tubes, cycle tyres and tubes, transmission belting and industrial hoses, storage batteries and ebonite products, automobile components, etc. Our embhasis has primarily been more on the awakening consciousness for different types of recycled rubber products -- more potential source of course is reclaimed rubber, and guided sponsorship through institutions as well as efforts for incorporating adequate facilities in the National Power and Energy Act, tax rebates, import facilities for scrapped materials, export incentives and of late, the trend to offer transfer of technology and turn-key implementation of reclaimed rubber projects in other developing countries.

NEED FOR PROPER PLANNING

Recycled Rubbers

Amidst the terrible psychology of economic recession, our country has like many other countries of the world been encountered with enormous problems but one of the blessings in disguise, should be the rehabilitation of the industry with a universal slogan: "Slimming down of excess capacity".

With the advent of serious planning through the Government sponsored financing institutions, consultancy bureaus, senior scientists and technologists as well as planners, it is definitely a time to assert strenous efforts to:

1. Cut costs;
2. Improve efficiency and
3. Diversify into new products if convenient for competitive markets. This is certainly not an opportune time with high interest rates and its adverse burdens on the overall economy of the industrial organised sector -- many companies are still bursting with more and more capital to invest.

In these glaring irregularities prevalent all over the economic fronts, no wonder, the Indian Rubber Reclaimers Association, has drawn the attention of the Government of India in regard to the excessive installed capacity of reclaimed rubber (a form of Recycled Rubber), in the organised sector; 11 units presently working with 55,000 tonnes capacity as against the demand and consumption of about 30,000 tonnes:

Year	Production (tonnes)	Consumption (tonnes)
1981	24,926	25,388
1982	28,290	29,282
1983	30,486	29,815
1984	35,410	33,480
1985	39,165	38,550
1986	39,195	38,215
1987(Apr-Sep)	18,400	18,240

The surplus installed capacity of approximately 17,000 tonnes on the existing units is reliably conceived quite satisfactory till 1990 based on the present demand forecast. Let us be little more informative about the subject under review.

RUBBER SCIENCE AND TECHNOLOGY IN INDIA

The estimated production of Natural Rubber and different types of Synthetic Rubbers, all over the world, has reached 11.6 million tonnes and 32% of which is Natural Rubber. The total rubber products manufactured and consumed could be as much as 20 million tonnes. After the utilisation of rubber products, most of these are scrapped and the problem of reutilisation of such an enormous quantity of scrapped rubber has always focussed the attention of senior scientists and rubber technologists.

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* Extracted from a paper presented in the National Seminar on "Role of Building Materials Industries in conversion of Wastes into Wealth" under the auspices of Cement Research Institute of India, held at New Delhi in March, 1985 and suitably updated.

What has now been popularly classified as recycled rubbers, many attempts have been made to recover scrap rubbers and reuse the same in rubber products. The earliest patent covering the treatment of vulcanized waste rubber was granted to Alexander Parkes in 1846 and to Charles Goodyear in 1853. Recovery of rubber was an easy process initially when natural rubber was the only polymer with the advent of synthetic rubbers, regeneration of rubber waste has posed many problems.

RECLAMATION -- REGENERATION -- RECYCLED RUBBERS

Reclaimed Rubbers

Although recycled rubber could mean many forms of rubbers, such as rubber crumbs, powdered scrap rubber, treated particulate scrap rubber, depolymerised scrap rubber and all these have, by and large, established potential applications in rubber sciences and technology -- however, the principal recycled rubber would normally mean, what we call, Reclaimed Rubber.

J.M. Ball has defined reclaimed rubber as "It is the product resulting from the treatment of vulcanized scrap tyres, tubes and miscellaneous waste rubber articles by the application of heat and chemical agents, whereby a substantial devulcanization or regneration of the rubber compound to its original plastic state is effected, thus permitting the product to be processed, compounded and vulcanized. Reclaiming is essentially depolymerisation, the combined sulphur is not moved. The product is sold for use as a raw material in the manufacture of rubber goods with or without admixture with crude rubber or synthetic rubber.

Substantial source of scrap rubber for the purpose of reclaiming is the automobile tyre -- a tyre is a composite product containing rubber, synthetic fibre and steel wire. The composite rubber composition of tread is generally a judicious combination of natural rubber, synthetic rubber and butadiene rubber.

Recovery of rubber is always associated with removal of fibre and steel from the rubbers. The process of reclaiming has in general, the following aspects:

1. Fine grinding of waste,
2. Separation of fibres and metals,
3. Incorporation of reclaiming chemicals and oils,
4. Heat treatment, and
5. Mechanical process of straining and refining.

There are many economical processes of reclaiming rubbers -- these are certainly outside the purview of this Seminar, however, it should be realised that it is a very capital intensive industry and in this context the protest of the Indian Rubber Reclaimers Association must be carefully evaluated.

The problem of disposal and re-use of waste rubber should focus our serious attention -- in view of shortages of raw materials and ever increasing prices, methods are being evolved for the maximum utilisation of waste elastomeric polymers back into rubber products.

Improvements made in the prevailing processes of reclaiming by minimising the use of energy and total elimination of final process of refining, will help in the increased use of reclaimed rubber.

100% ground rubber powder of various mesh sizes have been used successfully with or without surface treatment. Low temperature grinding and use of Cryogenic process of grinding will assist in the increasing use of both the natural rubber as well as synthetic rubber powders.

Crumb rubber with surface treatment has evoked more interest in compounding applications. With the availability of de-vulcanized rubber, rubber technologists have been contemplating larger uses -- a number of derivatives having economic utilisation can also be developed.

The use of scrap rubber as an asphalt binder for roads will also increase in future.

Different types of reclaimed rubbers are:

1. Whole tyre reclaim,
2. Minimum staining reclaim,
3. Tyre tread reclaim,
4. Tyre carcas reclaim,
5 Coloured inner tube reclaim,
6. Black inner tube reclaim,
7. Coloured mechanical goods reclaim,
8. Foot wear reclaim, resin and non-resin type,
9. Fibre bearing reclaim,
10. Black mechanical goods reclaim,
11. Drab reclaim,
12. Float reclaim,
13. Semi-float reclaim,
14. Butyl reclaim,
15. Neoprine reclaim,
16. Nitrile reclaim.

The essential properties of reclaimed rubber as compounding ingredients for rubber technology:

1. Reclaim rubber has excellent ageing properties when used in either with natural or synthetic rubbers -- in cured as well as uncured conditions. The severe treatment to which it has been subjected, which includes oxidation, heating, digestion, washing and mastication in air and these appear to have stabilised the hydro-carbons.

2. The ultimate tensile strength, the modules, the resilience, tear resistance and abrasion resistance are generally affected as the proportion of tyre reclaim is increased in rubber compound formulations. Hence, very judicious planning from the Rubber Scientists and Technologists while evaluating the mechanical as well as thermodynamic physical properties of the rubber products.

3. This should, however, be appreciated that reclaimed rubber itself can be compounded and reinforced with carbon black in the same manner as other polymers.

BROAD APPLICATIONS OF RECLAIMED RUBBER

Not necessarily the utility of reclaimed rubber or other forms of recycled rubbers, in the building materials industry, by and large, the scope of the subject under review must be appreciated in wider perspective.

The conventional applications of reclaimed rubber as well as other forms of recycled rubbers -- crumbs, powders, de-vulcanized rubbers, treated particulate scrap rubber and de-polymerized scrap rubber may be summarised as follows:

-- Adhesives and Sealants,
-- Insulation Tapes,
-- Passenger Car Tyre undertread and Side Wall,
-- Tubeless Tyre Inner Liner,
-- Tyre Bead Wire Insulation,
-- Retreading Gum Compounds,
-- Cycle Tyres and Cycle Tube (extremely refined grades),
-- Automobile Moulded Components -- mountings, silence blocks etc.
-- Mechanical Moulded Goods,
-- Hard Rubber Battery Containers,
-- Ebonite and Hard Rubber products,
-- Semi-pneumatic and Solid Tyres,
-- Conveyor Belt friction and cover,
-- Radiator Hoses, Water suction and delivery hoses,
-- Packing Gaskets and Sheets -- Calendered process material,
-- Moulded Soles and Heels for footwear -- better grip and abrasion.

Amongst the non-conventional applications, the following could be of interest to many:

-- Modified asphalts in road surface and joint seals,
-- Butyl scrap in solvents for sealants,
-- Combined with Maleic acid with plastics,
-- Mixed with resins for roofing felts,
-- Carpet under lay,
-- Ground scrap in roof felts,
-- Discarded tyres as dock fenders in harbours.

As stated earlier, owing to technical grounds, the reclaimed rubber being consumed -- atleast in India, is 12-14% of total new rubbers. Its use in tyre treading material has not been viewed in view of highly critical product, the automobile tyre. However, Mr. Jon Menough, Contributing Technical Service Editor *"Rubber World"* has on "Computers : Let's think small" (issue August 1983) stated -- ".....(as and when) .... type of adjustment is necessary to achieve some change in the properties of the compound, while in terms of the formula, this is not a major change -- it necessitates a number of largely redundant downstream calculations and revision that must be done .... with technical expertise .... if a person is merely to look at the cost effectiveness of various combinations of ingredients, he must repeatedly go through this procedure to get accurate final costs". For the process of optimisation or maximising the benefits or minimising the cost restraints, computers are being increasingly used amongst advanced countries. Synthetic rubber based Bridge Bearings and Dock Fenders System have been evaluated as an example of potential complete optimisations. A computer is capable of accepting enormous preconceived information and of deciding the cheapest possible product of any given application. In essence, it is programmed to examine each possible Proto Sample from the cheapest upwards untill it approves of which matches the requirements.

Obviously, the judicious incorporation of reclaimed rubber and other forms of recycled rubbers in thousands of rubber product formulations and their applications in a wide range of utilities, assitance of recognised rubber institutions such as All India Rubber Industries Association and their technical committee members, The Directorate of Indian Rubber Manufacturers Research Association and the Council of Scientific and Industrial Research as well as reputed manufacturers of rubbers and rubber chemicals; Bayer (India) Limited, Polyolefins Industries Limited, Indian Petrochemicals Corporation Limited, Alkali & Chemicals Corporation Limited and Rubber Board and its affliated R & D facilities must be expected of by thousands of small scale, medium scale

and of course large scale rubber units -- these institutions multinational or otherwise, manufacturers should be in a position to offer technical guidance on the computerised and programmed information.

FUTURE OF RECLAIMED RUBBER -- TECHNOLOGICAL INNOVATIONS

Another essential aspect of anticipating many more tonnes of reclaimed rubber in rubber formulations and its compounding technologies could mean a critical review of applications of the products -- many of these products generally conform to Indian Standard Specification or British Standard Specification as well as Standards framed through ISO. A flexible approach must be the order of the senior intellectuals, having occupied the positions of command and decision in case the waste of any industry is to be seriously converted into wealth. A high powered, preferably Government sponsored agency must help suggest measures for the recycling industrial waste.

Special tax rebates for the purchase of recycling equipments in the country's National Power and Energy Act will provide a major stimulus needed to expand market potentials for recycles. This Department of Power and Energy must ensure recycling targets, provisions calling the nation's major energy using industries to maximize their utilisations.

Amongst the serious restrictions and hindrances to the market potential for different types of scrapped rubber and specially automobile tyres, is the non-discriminatory freight rates -- perhaps doubled or even tripled than the normal rates of transportation of the primary raw-materials. In this context, it would be worth consideration to properly investigate and revise all the inequalities on recycled materials in general and for the reclaimed rubber regenerating company in particular.

These could have been very powerful reasons -- also alongwith the fact that regeneration of scrapped rubber tyres are very highly labour intensive industries, consuming high power etc. that there has been a trend all over the developed countries such as USA, UK, France, Germany, Australia, Canada, etc. to discontinue the manufacturing activities of Reclaimed rubber.

However, in coniderations of tremendous requirements of reclaimed rubber in the developing countries specially owing to oil crisis and the conservation of energy, India cannot afford to ignore the need base reclaimed rubber as one of the essential raw-material

The import facilities of scrapped tyres under OGL ha not been found economically viable due to heavy co of freight, import duty and handling. The export pote tial is almost nil owing to limited compensatory facilitie Neighbouring countries, such as Sri Lanka, Nigeri Bangladesh, etc. have been contemplating to have the own reclaimed rubber plants.

The future of recycled rubbers -- in particula reclaimed rubber -- in India would be based on thes considerations: Future purpose and functions of reclain ing, substantial growth and use of reclaimed rubbe importance of scrap collections and their transportatio to the reclaiming plants, the reclaiming synthetics, th reclaimed production costs, significant new advance in the reclaimed qualities and problems of their sta dardisation.

In a recent lecture in one of the International Sem nars, Mr. J. Westhead has concluded the observation -- It would be difficult to visualise a rubber industry with out reclaimed rubber. May be, compounders sometim feel that there are too many compounding ingredient available and offer for evaluations -- may be sometim they feel tempted to practise and preach variety an reduction. But it is difficult whether anyone would con template deleting reclaimed rubber from a list of esse tial materials".

A senior rubber technologist, Mr. J. Samson, an ex chief chemist of Firestone Tyres and Rubber Co. o India, has made a very interesting observation on th use of reclaimed rubber by tyre industry -- "The tyr companies are very cost conscious and they use a larg quantity of reclaim rubber wherever it is possible t reduce cost and yet maintain a good quality. This polic is of course a good one and it has helped to keep th tyre companies competitive. If a non-tyre rubber chem ist is shown the recipe used in passenger tyre inne body, he will get a big surprise at the large quantity o reclaim used, but the performance of the recipe i good.... There is a certain amount of adium attached t the use of reclaimed rubber and tyre companies whic make it keep the operation as secret as possible. There are beautiful brochures illustrating all the products mad by some of the tyre companies, but reclaimed rubbe is left out".

(To be continued

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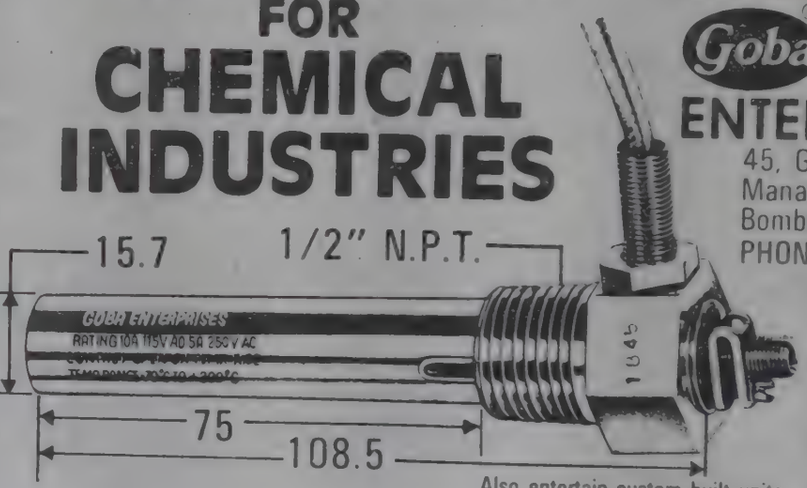

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Chemical News From Abroad

OXY EXPANDS PORTFOLIO WITH $2.2BN CAIN DEAL

In a deal valued at a total of $2.2bn, Occidental Petroleum is acquiring Cain Chemical Inc, the Houston-based company set up a year ago to integrate the chemical assets of the Sterling Group. The merger will boost Occidental's chemical sales to over $4bn and make the group the third largest US ethylene producer with total capacity of some 11.3m ton/year.

Under the terms of a definitive agreement, Occidental will pay $1.25bn cash for Cain's common stock. Including debt — estimated at $830m — and preferred stock at book value, the total value of the deal is expected to be $2.2bn. At 3.5 times cash flow, analysts believe Oxy got a good deal. The price is less than the replacement cost of Cain's plants.

For Occidental, this latest deal continues the ambitious chemicals expansion programme which began when Ray Irani and Roger Hirl joined the group from Olin. In 1986 Occidental Chemical Corp added Diamond Shamrock Chemicals and Tenneco Polymers to its portfolio at a combined cost of around $900m. OxyChem is currently the biggest US PVC producer.

Sources say that having reached a position in the US PVC market where more acquisitions would run into trouble with anti-trust authorities, Occidental targeted Cain as a means of continuing growth and broadening the group's polymers portfolio. Cain is the third largest US producer of hdPE with a capacity of some 400,000 ton/year at plants at Orange, Victoria and Matagorda, Texas.

According to Bill McMinn, president and ceo of Cain, the deal with Occidental is very satisfactory: "Since the company was formed a year ago, business has improved dramatically. By January this year we started to examine ways of boosting stockholders' — our employees' — capital. We looked at a public offering, selling merging and recapitalisation. But then Occidental came to us with this deal in February and we had to say yes."

Cain was formed from chemicals assets acquired by Gordon Cain's Sterling Group from Du Pont, ICI and PPG. The company operates seven plants — olefins, aromatics and polyolefins — and pipeline and storage facilities located in the Texas Gulf Coast area. It has built up a reputation for running these plants efficiently at low costs and, significantly, Occidental has asked the streamlined management team to remain in harness. McMinn says Cain's management will accept, although Gorden Cain will quit.

Occidental Petroleum's chairman Armand Hammer says the deal will improve his group's net income and cash flow and will enable Cain to "aggressively capitalize on opportunities for growth." McMinn says Cain already had board approval for five new projects and expects them to be carried out in the near future.

These include co-generation facilities for Chocolate Bayou and Corpus Christi, debottlenecking at Victoria and Orange to add 50,000 ton/year to hdPE capacity, and the addition of a new 180,000 ton/year high molecular weight hdPE film line at Matagorda.

McMinn says the company has also continued to look at other

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acquisitions. "The basis for this, and or expansions, is that we do not really want to be in the merchant ethylene market. When we started we used 75 per cent and sold 25 per cent, but we'd rather use it all downstream ourselves," he explains.

At the seven plants — others include Beaumont and Bayport — Cain produces almost 1.1m ton/year ethylene, 550,000 ton/year propylene, 500,000 ton/year benzene, 150,000 ton/year ethylene glycol and 68,000 ton/year glycol and ethers, acetates and amines.

Occidental Chemical posted sales of $2.8bn and profits of $322m for 1987. Operations include fertilizers, animal feeds, chloralkalis, eletrochemicals, detergents, polymers and plastics, and the recently added olefins business. The latter, at Lake Charles, Louisiana has 226,000 ton/year ethylene.

ITALIANS RESUME MERGER TALKS

New talks have started between Italy's major firms, Enichem and Montedison for possible merging of their chemical operations possibly into a L12bn operation, and involving 8,000-9,000 job cuts. State-owned Enichem has sent a proposal to Montedison concerning the pooling of assets in certain sectors, believed to be petrochemicals, agricultural chemicals, fibres and rubber chemicals and to include Montedipe and Ausimont.

The proposal is being assessed by Alexander Giacco, Montedison's new vice chairman. Both sides say the Himont polypropylene business and the Erbamont drugs business are not to be included in negotiations which are expected to start soon following the signing of a letter of intent.

Raul Gardini, chairman of Montedison's parent, the Ferruzzi group, is keen to restructure the chemical company and reduce its $6.33bn debt. But Enichem says it is reluctant to put cash into the deal.

AKZO WINS GERMAN, UK ARAMID DISPUTES

Akzo of the Netherlands has won two court cases in its long-running aramid fibre patents dispute with Du Pont.

In the UK, a London Court has overturned a ban on sales of Akzo's Twaron aramid fibre and imports will be permitted from April 27 this year. The decision means that Du Foint will have to grant Akzo a licence of right and negotiate a royalty settlement with the Dutch group.

Meanwhile, a court at Dusseldorf, West Germany has upheld an earlier decision that Du Pont's Kevlar aramid fibre infringes Akzo's solvent patent for Twaron. The Dutch group can now apply for an injunction to prevent sales of the Du Pont product in Germany.

According to Siegfried Wittauer, group managing director of Du Pont International with responsibility for textile fibres in Europe, negotiations between the two companies are continuing in an effort to end the dispute. But he remains hopeful rather than optimistic that agreement will be reached.

Wittauer also said that if Akz applied for an injunction on Ke vlar sales in Germany, Du Pon has an alternative technology "u its sleeve" which will not infrin ge the Twaron solvent patent.

Another case is pending in th UK courts in which Akzo is see king an injunction against Kevla for infringement of the Twaro solvent patent. A decision is ex pected on April 29.

BASF, DOW LEAD RACE FOR BORG-WARNER

The Battle for Borg-Warner's chemicals business is hotting up with US sources indicating tha some bids — valued betwee $1.7bn and $1.9bn — are al ready in. At present, the favouri tes are BASF and Dow Chemi cal, but a Japanese trio — Mit subishi, Sumitomo and Mitsu — are considered dark horses with plenty of buying power in reserve. Outsiders are said to in clude Chevron, Amoco and GE Plastics. Monsanto — a majo ABS producer — is considered a non-runnner.

Some observers suggest tha BASF and Dow are pursuing Borg-Warner aggressively. There are even reports that Dow is pre pared to sell off some of its ABS assets in order to avoid objections from the US antitrust auth orities, but official company sour ces reject this idea.

There appears to be a general feeling that Merrill Lynch is asking too high a price for Borg-Warner at $2.2bn, but some observers believe that Japanese buyers may be prepared to pay. Sumitomo sources, however, have indicated that they at least will not.

RCHANT BANK ACQUIRES PASO FOR $450M

Rexene corp, the holding com-ny of El Paso Products, has n acquired by Gilliam Joseph Littlejohn, a New York-based rchant bank, for $450m.

Gilliam Joseph & Littlejohn s El Paso is an attractive che-al company, particularly as emphasis is increasingly on re differentiated products. El o produces and markets ther-plastics and petrochemicals, luding polyethylene, polypro-ene and styrene.

t stands in the top ten domes-producers of these petroche-al products in the US, claim-a 6-8 per cent share of the ket. Rexene, based in Odessa, as, posted sales of $515m year.

PP and PE plants are located Odessa and Bayport, Texas. ddition to the 67,000 ton/year capacity at Odessa, 20,000 /year is being debottlenecked year. Expansion is also un-way at Bayport, where 135-ton/year should be on stream 1990, adding to an existing ,000 ton/year plant.

Plant capacity for 185,000 /year ldPE is located at Ode-. The 57,000 ton/year ldPE nt at Bayport was restarted year. Odessa has a facility 136,000 ton/year styrene. ciality firms divisions are lo-d in Delaware, Wisconsin California, with a combined acity totalling 55,000 ton .

Two years ago, Gilliam Jos-& Littlejohn acquired engi-neered plastic concern, Polymer Corp from Chese-brough Ponds. A spokesperson for the merchant bank said there was no over-lap between the two chemical concerns. There are no immediate plans for El Paso.

SHELL LOWERS PCS EXPECTATIONS

In its BID, entered last January, to obtain the Singapore government's 50 per cent stake in Petrochemical Corp of Singapore (PCS), Shell International Chemical Co has said it is prepared to accept a reduced share. Shell's chairman in Singapore, Dick van Hilten, has indicated that the company might settle for 40 per cent of the government's stake in PCS.

However, it is also possible that the government may retain its entire stake in the company as other shareholders are concerned over the planned divestiture. A Japanese consortium led by Sumitomo jointly owns PCS.

Sumitomo expressed dismay when the Singapore authorities said it was considering Shell's bid. It believes PCS is a "national project" between the two countries. The Japanese company is said to view Shell's move as opportunistic, seeking to cash in on PCS' recently announced profitability. A second round of discussions between Shell and Sumitomo are planned for mid-May.

Meanwhile Shell Australia has posted last year's results. Profits of Aus$155m ($119m), triple 1986 figures, were recorded on sales up slightly at Aus$3.4-

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bn. Chemicals operations posted the fifth successive year of profit increase.

The company is planning to spend Aus$2.6bn in the next five years. Most is earmarked for oil although around Aus$300m will be invested in chemicals, coal and metals.

CDF TO PARTLY PRIVATIZE NORSOLOR

France's State-Owned CdF Chimie is going ahead with the partial privatization of its petrochemicals and specialities subsidiary Norsolor, with a FF533m ($94m) capital increase. Private investors will be able to buy up to 25 per cent of the company. However, CdF may subscribe to the capital increase itself, leaving only 19 per cent open to private investors.

Last year Norsolor posted net profits exceeding FF1bn and sales hovering around FF10bn. Current plans include a FF100m investment in polystyrene at Carling.

Meanwhile CdF Chimie is about to conclude a joint venture agreement with La Rhenane, an expanded polystyrene producer. CdF's subsidiaries Duplus Ketin and Plastiques Industriels de l' Aupe, which produce 10,000 ton/year of expanded polystyrene, will join up with La Rhenane. In exchange CdF will have a 15 per cent stake in the venture. La Rhenane produces 40,000 ton/year of polystyrene.

GERMAN GOVERNMENT TO SELL VIAG STAKE

Viag, the West German chemicals, energy and aluminium group is to be fully privatized next month when the government will sell its remaining 60 per cent stake, worth an estimated DM1.4bn ($843m).

The group's profits for 1987 rose by 16 per cent to DM190.7-m although sales dipped 2.8 per cent to DM8.44bn. The chemical division accounts for 14 per cent of group sales and was profitable in 1987.

OLIN JOINS ALBRIGHT, TEXAS PHOS ACID UNIT

Albright & Wilson and Texasgulf are planning to expand capacity at their Lee Creek, North Carolina, phosphoric acid plant, currently being constructed. The decision follows the signing of a letter of intent with Olin Corp, which will use the extra acid at its phosphates plant at Joliet.

Capacities for the previously announced plant or the expansion have not been disclosed. However, Olin's stake in the venture is $10m. The company's Joliet plant produces 175,000 ton/year of sodium tripolyphosphate.

At present the Joliet plant uses unpurified phoshoric acid, which is treated on site. Olin says the new venture will provide it with pure acid, giving significant cost savings through reduced energy consumption and process simplification. Robert Yohe, Olin's executive vice president believes that, the venture will give the Company "a solid competitive position in the market place".

Texasgulf, a subsidiary of Elf Aquitaine, is constructing and will operate the acid plant, using Albright & Wilson wet process phosphoric acid technology. Albright & Wilson Americas will be responsible for selling acid other than that used at Joliet.

DEUTSCHE TEXACO LOOKS FOR BUYERS

Deutsche Texaco's petrochemicals operations are up for sale following the US parent's decision to hive off the entire German subsidiary. The petrochemicals businesses account for between 8-10 per cent of Deutsche Texaco's DM 2.5-2.7bn ($1.5bn) sales.

Operations range from heavy petrochemicals to more specialized products, such as plasticizers. A refinery at Heide produces 130,000 ton/year ethylene, propylene, and 180,000 ton/year aromatics, including 150,000 ton/year orthoxylene. The company also has a 42 per cent stake in the Karlsruhe refinery.

Petrochemicals plants are located at Moers-Meerbeck. Major products include methyl ethyl ketone, isopropanol, acetone, alkyl benzene and maleic anhydride. Deutsche Texaco's Condea Chemie, based in Brunsbuttel, makes fatty acids, plasticizers and calcinated clays. Huls and Hoechst have both shown past interest in this business.

Strong synergy between Exxon's petrochemical products portfolio and Deutsche Texaco's has led to speculation that Exxon is a potential buyer. This is despite Exxon chairman Larry Rawl's reported comments that his company is not interested in Texaco's $5bn assets sale.

Chemical Markets Abroad

EO, MEG SHUTDOWNS SEND SPOT LEVELS SOARING

Since the new year, demand for ethylene oxide (EO) in Western Europe has soared, taking levels to almost double those seen this time last year. With producers posting "take it or leave it" numbers, observers are predicting no slowdown in price increases for EO and its derivatives, in particular monoethylene glycol (MEG), this year.

EO prices have firmed to around DM1 600/ton with levels being quoted just under this figure for second quarter contract business and slightly above for spot deals. Spot prices vary "depending on geography" but numbers up to DM1 700/ton have been heard in Italy. Some 25 per cent of EO business in Western Europe is spot but this figure is declining as buyers place increasing importance on product availability and turn to contracts to cover themselves this year.

Latest contract and spot EO prices are considerably up on levels heard in the new year which were hovering around DM1,200-1,300/ton. At the time producers, optimistically, were predicting DM1,500/ton for Q2, now figures of DM1,800/ton are already being suggested for Q3 business.

There are three factors tightening the EO and MEG market in Europe. A number of major plants are due for planned shutdowns, there is strong demand for MEG for polyester production in the Far East, and in some cases ethylene is being diverted away from EO into higher value derivatives.

Buyers and producers alike predict EO supply will be extremely short for the rest of this year. The market has been tight since the explosion at BP's Antwerp unit last July and it is now understood that the 113,000 ton/year plant will not be back on stream until the end of Q3.

Some producers have arranged swap deals to cover contract commitments during shutdowns but given the number of plants expected off stream this has proved difficult.

One producer estimated that the shutdowns amount to some 5 per cent of total European EO capacity being out of action this year.

There has been some minor debottlenecking work completed during catalyst changes but there are no plans for new capacity in the pipeline from any producer.

BASF at Ludwigshafen has closed its EO unit between mid-April and mid-May and Erdolchemie, which has a major contract with Bayer, is closed from now until the end of May. Dow's plant at Terneuzen is expected to close for two or three weeks in July. This is followed by a few weeks of full capacity before the second round of closures begins in early autumn. Hoechst is understood to be off stream during August and September followed by BASF and ICI which are closing for four and three weeks respectively in October.

However, EO production has been hit as ethylene is diverted to other products, reducing supply and giving an impetus to

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price levels. Margins on derivatives such as low and high density polyethylene and VCM have risen more sharply and are proving more attractive to ethylene producers, leaving EO "on the back seat" according to one producer, who added: "Available ethylene is going down the plastics route rather than the chemicals route — we are certainly not seeing very much." Meanwhile, in the US, EO has firmed from 22 cents/pound in the new year to between 30-35 cents/pound for Q2 contracts.

Polyester demand in the Far East continues to drain MEG out of Europe. There is massive unsatisfied demand in China and India which sources suggest requires some 10,000 ton of product a year.

Previously uncommitted Saudi product, which in the past was channelled to Europe, is now going to the Far East, and similarly, spare US MEG is going into these markets.

Demand for polyester is growing at 7-10 per cent/year and prices have shifted from $500-550/ton cif in December to $800/ton for fibre grade. Rumours of $900/ton being achieved have also been heard.

European MEG prices tend to be guided by what is happening in the fibre and polyester market and in line with these industries MEG prices have moved up from DM950/ton for fibre and DM1,100/ton for technical grade product in December to around DM1,400/ton for fibre and DM1,450/ton for technical grade in April.

One UK major said customers were paying up to DM1,500/ton for "limited quantities" of technical grade material. One producer encouraged by export prices and improved Far Eastern netbacks says: "If European levels fail to match those in the Far East, we will be forced to sell product out of Europe."

Despite the mild weather this winter and weaker than expected demand for antifreeze, prices have still forged ahead. Car manufacturers say prices have gone up 35 per cent in the last 12 months and they are already expressing fears over new levels. They say higher antifreeze prices will not affect prices for new cars but clearly will put up "off the shelf" prices for the additive. In the US contract MEG prices are around 33-35 cents/pound delivered.

POLYSAR MULLS STYRENE RESTART

Canada's Polysar has confirmed it is investigating the possibility of restarting its 100,000 ton/year styrene unit at Sarnia, Ontario mothballed since 1982. However, the company said a final decision would not be taken until May.

Polysar began looking at the restart last Autumn but following the stock market collapse in October, put the project on hold until the impact of the crash on the North American styrene business could be assessed. A Polysar spokesman said: "The situation has been reexamined and we believe there will be little or no effect on the styrene market. We have therefore brought the project forward again."

Some Can$30m ($24.3m) will need to be spent on demothballing the plant which will take up to 10 months to complete. Nearly all output from the unit is destined for the US where prices have risen from 54-55 cents/pound in November to current levels of 73-75 cents/pound.

If Polysar gives the project the green light in May, start-up will be in 1989. This will allow the company to take advantage of the US-Canada free trade pact under which duties on most chemicals will be removed in five equal annual instalments beginning next January. Polysar has stated that its styrene margin would improve by 2.5 cents/pound if the US eliminates its 2.4 per cent duty on styrene imports.

With record shortages of styrene in Europe, the US and Far East, the pressure is now on producers to find new capacity. In the US, Arco recently restarted its 100,000 ton/year plant in Louisiana and increased capacity at its 454,000 ton/year Channelview unit by around 45,000 ton/year. In Europe, Penta dis Ticaret, Arco and Dow are considering new plants.

PRODUCERS SEEK PRICE HIKE AS ABS MARKET TIGHTENS

Europe's ABS (acrylonitrile butadiene styrene) market is continuing to tighten, led by healthy demand from the automotive industry. Producers are seeking a price initiative for May which is expected to lift levels on most grades by 5-6 per cent.

Demand growth is ABS is continuing strongly and although it is not likely to touch the 6-7 per cent increase seen last year, producers report that output is ahead by nearly 5 per cent for the first quarter and growth of 3-3.5

per cent is envisaged for this year.

Current prices are little changed on year-end levels for 1987, with the basic automotive black grade ABS moving at around DM4.40-4.60/kg. Coloured grades have made some progress at the top end to DM4.80-5.20/kg, although producers say that this merely reflects the increasing cost of speciality pigments and additives used in higher grades.

Against the background of increasing demand and cost pressure from rising monomer prices, most producers are looking to hike levels for May business by 5-6 per cent. Although some producers are adopting a wait-and-see approach to pricing efforts, the move has received general support and most producers expect increases to be achieved by the summer.

Non-integrated ABS producers have been suffering from rising feedstock costs since 1986 when the profitability enjoyed by the industry "vanished overnight".

Styrene is the main cause for concern among producers. It has been steadily increasing throughout 1987 and 1988 and is expected to move up a further DM100-200/ton to DM2,300-2,400/ton for Q2 business.

Acrylo prices, too remain high but look set to ease slightly in the second quarter from current levels of DM1,770-1,810/ton. Only butadiene is providing cheer to non-integrated producers — after a disastrous first quarter second quarter contracts are expected to drop by nearly a third.

Historically, however, ABS prices have always been market driven and it is unlikely that feedstock costs will be used as a lever to raise prices for May. Instead producers will be arguing that annual growth rates of 3 per cent/year are expected until the end of the decade. Production is moving very close to capacity and no new plants are due on stream before 1990 putting increasing pressure on supply.

In addition, the surge of cheap imports from the Far East which hit Europe last year has now all dried up. Rocketing styrene costs and strong domestic demand are making it much more logical for Far Eastern producers to sell on the domestic market and a recent recovery in prices in China has made that a more lucrative proposition.

Imports into Europe remain "somewhat erratic" and prices have not been heard below DM-3.80/kg against DM3.20/kg done at the end of last year.

In Europe, the ABS balance has not yet become so critical that producers have put consumers on allocation. however, stocks of material remain low and lead times are quoted at 4-6 weeks for basic grades with some speciality grades taking double this.

Although further price increases on ABS are not expected before Q4, margins remain "substantially below" reinvestment levels. With only Dow's 40,000 ton unit at Terneuzen due on stream in 1990, opportunity for increased supply from Europe is limited.

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DSM has plans to increase capacity by 15,000 ton/year stepwise through plant improvements and Borg-Warner is planning to add 25,000 ton/year to ABS capacity in France and the Netherlands by the end of this year. However, with a new ABS unit estimated to cost between $50-60m, producers say that firm decisions on new capacity could be delayed until at least 1990 or until margins improve significantly.

HYDRO OPENS UK FERTILIZER UNIT

Hydro Fertilizers has opened its £90m nitric acid and ammonium nitrate fertilizer complex at Immingham in north east England.

The nitric acid plant has a capacity of 1,500 ton/day and delivers four times the quantity of the 20 year old plant it replaces. Total nitric acid capacity at the site is 2,100 ton/day which includes output from a smaller 600 ton/day unit.

The new ammonium nitrate plant will have a nameplate capacity of 3,000 ton/day The feedstock nitric acid will be used with liquid ammonium nitrate which is then processed into granular ammonium nitrate in the new 1,800 ton/day granulation unit.

Using the "fluid bed" process, Hydro manufactures Extran, a 345.5 per cent nitrogen granule. Five packaging lines have been installed to handle bagging of this product. The existing compound granulation plant at Immingham is also being modified at the moment and capacity will be doubled to 250,000 ton/year.

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EXXON EMPHASISES MARKET COMMITMENT

A recent article in ECN gave a misleading picture of Exxon Chemicals' commitment to the merchant market. As one of the world's top three producers of olefins and aromatics and a major supplier to the merchant market, the company says it has no intention of reducing the importance of this business.

Speaking to journalists in London recently, John Akitt, president of Exxon Chemical International and basic chemicals operations said the company's basic chemical strategy was twofold: "To provide a strong foundation of low cost, high quality chemical building blocks for Exxon Chemical and to serve our important external customers as their preferred supplier of basic raw materials.

"We are very dependent on our merchant customers", Akitt added. "I am not concerned about keeping everything we make. If you want to grow you can't be dependent on that."

In Europe ethylene sales represent some 10-15 per cent of Exxon Chemicals output (720,000 ton at present), some under long term contract. Merchant sales of propylene are higher and all of the butadiene and some other C_4's produced by the company are sold. In addition of its 700-000 ton of aromatics, all of its benzene, cyclohexane and paraxylene output is sold on the merchant market.

In the US meanwhile, Exxon Chemicals sells 60 per cent of its ethylene to the merchant market, a "significant" amount of propylene and all its butadiene. Again, all of its benzene and paraxylene are sold to the merchant market out of a total 90 per cent of aromatics output.

In the European Market

Naphtha has firmed in line with crude but after an uncertain start to the week in the wake of Gulf hostilities, prices have settled at $156-159/ton.

Demand for ethylene is strong with a number of European buyers looking for deepsea parcels. Availability is tight and no business has been confirmed leaving prices steady at $405-415/ton cif. However, one deal has been rumoured at $435/ton cif and some traders are already confident of achieving over $440/ton cif when product becomes available from the Libyan cracker, due to restart on April 26.

Propylene prices have firmed sharply to DM560-580/ton cif on the back of strong demand and buyers chasing a limited supply of parcels. Shell bought one 1,500 ton parcel at DM580/ton cif and a further 3-4,000 ton at DM565-570/ton cif, and levels close to DM600/ton are already being talked. Most Q2 contract business has now been settled at DM588/ton.

Opinions are still divided on butadiene prices, and although numbers below $200/ton fob are still being heard, producers say the worst of the price slide is over. One spot deal was concluded at $220/ton fob 2-3,000 ton out of Spain for export to the Far East.

Benzene prices have held at recent levels although the range has stretched to $315-325/ton. Market information is varied, some traders say prices have weakened and are looking for product around $300-310/ton while others say prices have been bolstered by oil price speculation.

While toluene levels remain unchanged at $255-265/ton, HDA convertors may move into the market as benzene levels firm. Virgin and solvent xylenes have moved up $10/ton taking levels to $290-300/ton for virgin on the back of paraxylene producer buying.

Paraxylene numbers are around $600-610/ton but continued demand from Far Eastern PTA producers could firm the market to March levels. India is said to be looking for product despite its 5,000 ton purchase recently. Soviet shipments due in April have been delayed until May or June.

Orthoxylene activity has been subdued but numbers up to $345/ton have been heard. The contract price of 16.5 cents/pound has been settled in the US and traders say this could tempt them to ship product across the Atlantic.

In a week of frenzied trading, styrene prices shot up $100/ton to $1,695-1,710/ton for T2 and $1,680-1,690/ton for T1. BASF is understood to have bought around 7,000 tons in recently due to some technical problems at its Ludwigshafen plant and delayed Rhine shipments during recent flooding. The strike at CdF Chimie/Norsolor's plant is now over but Atochem's unit at Lacq is still trying to resolve the dispute. As we went to press prices were charging hourly.

Methanol prices have risen to $165-170/ton cif for T1 and DM309-313/ton for T2. The market is still tight and demand for MTBE production remains strong. Tenneco in the US is restarting its 260,000 ton/year plant at Pasadena in August.

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Biotechnology

FRENCH & UK BIOTECH FIRMS FACE UNCLEAR FUTURE

France is trailing its European partners, the US and Japan in the commerical development of biotechnology. Rene Sautier, former president of Sanofi, warns in a report commissioned by the French government that a greater concentration of France's financial industrial and research efforts will be required if it is to catch up.

Sautier recommends that France focuses on development of biotechnology for agriculture and the health and agrifood industries. If France fails to concentrate on these sectors it will lose any potential foothold in future markets. By the year 2000, biotechnology will account for 23 per cent of the world's agrifood market, 20 per cent of the drugs market and about 5 per cent of the agricultural market.

While the French government has backed biotechnology research to the tune of FF2.8bn ($496m) industrial development has been held back by a number of circumstances. The most important constraints identified by Sautier are French drug price controls, low selling prices in the agrifood sector imposed by the powerful retailing circuit in France and the partitioning of basic and applied French research.

Sautier recommends that research programmes should be better coordinated and that the French government should devise laws for biotechnology and encourage small firms and technology transfer while protecting intellectual property with patent laws modelled on Japanese and US rules.

Surprisingly, in a newly published report from Arthur Young International, UK firms do not place patent protection high on the priority list for success in biotechnology. UK firms believe that research expertise, although an important element in company competitiveness to date, will be superceded by marketing and production expertise as products emerge.

Financing biotechnology in the UK appears to be the biggest hurdle facing the fledgling industry. Many small UK outfits report having problems raising venture capital which is not helped by the unfamiliarity of the financiers with the new technologies. Others, according to the AYI report, feel that the growth rates and returns being demanded are excessive.

Recent changes in UK government support schemes may produce additional hurdles for small firms trying to start new research and development projects. Until recently such grants have been an important source of finance. The survey reveals that about 45 per cent of firms sucessfully applied for grants.

The report concludes that there is considerable activity in UK biotechnology but most firms are quite small. "It remains to be seen whether the smaller and younger UK industry can compete effectively with the much larger, better financed US industry of whether, yet again, the UK will have to take a back seat in a key technology area for the future."

GENENTECH SALES RISE, SIGNS DEAL

Genentech, the flagship of US biotechnology, almost doubled its sales in the first quarter of this year compared with last year with profits more than trebling in the same period. Genentech has reported sales in the first quarter of $74.4m and profits of $15.2m. Last year the company reported sales of $38.6m and $4.5m earnings for the same quarter.

Both the sales and earnings growth, Genentech reports, was fuelled by the increasing use of the genetically engineered growth hormone Protropin and increasing acceptability of the recently approved blood clot dissolving tissue plasminogen activator Activase. Genentech chief executive Robert Swanson reports that the number of patients receiving tpa has now doubled over the quarter to 2,000/week.

But some analysts were disappointed with tpa sales. It had been estimated that Genentech would sell some $45m worth of the drug but it appears that only $38m worth had been used. Sales of tpa may have been held back owing to the high cost of using the drug despite the demonstrated efficacy. A single dose costs $2,000.

Meanwhile, Kabigen, the Kabi-Vitrum subsidiary, is licensing its peptide hormone process to Genentech for the manufacture of the insulin-like growth factor I (IGF-I) and other peptides in development. With the licence, Genentech now has exclusive marketing rights in the US and Canada for IGF-I produced using KabiGen's EcoSec System pro-

cess. KabiVitrum has the rights for Europe and Japan.

The EcoSec System in Escherichia coli expression system in which the product is secreted directly into the surrounding culture medium. IGF-I is a peptide which may be useful in making vaccine components, and in the repair of damaged tissues and bone fractures. KabiGen is also using the process to produce other peptide hormones and is in discussion with other drug firms for other deals.

MAFF EXTENDS DINOSEB DEADLINE

Britain's Ministry of agriculture, fisheries and food (Maff) has extended its disposal deadline for dinoseb, the recently banned herbicide, beyond April 30, 1988 and has pledged £12,000 ($22,320) towards the costs of the programme. The UK government has not proposed a date for the new deadline but the move is seen as a more realistic approach to the problem.

The new arrangement was proposed by the British agrochemicals association and will reverse the usual supply flow. Farmers will send back dinoseb stocks to their merchants who in turn will return the stocks to the distributors and finally the manufacturers who will organize incineration.

The government was disappointed with the response from farmers to a pilot scheme proposed by merchant incineration firm Cleanaway. Under this scheme farmers were to deliver their own stocks and pay £3/litre for disposal. Under the new scheme the costs are expected to be significantly lower but the details are expected to be hammered out this week.

Manufacturers are thought to be holding stocks of about 100-000 litres themselves. The BAA is pleased that the Ministry has taken its suggestion on board, particularly as there was great concern that any disposal system could set a precedent for future withdrawals of agrochemicals from the marketplace.

SEARLE SIGNS R&D DEAL WITH CHINA

GD Searle and the Chinese state pharmaceutical administration have signed an agreement to cooperate in pharmaceuticals research and development in China with initial funding of $500,000. The partners will cooperate scientifically for the improvement of Chinese drugs, health care technologies and product development for the domestic and export markets.

The two partners are establishing an umbrella organization, Sino-Searle research and development trust, which will funnel benefits of the cooperation to the China national institute for pharmaceutical research and development. Searle will have the first refusal to license exclusively any products arising from the deal.

The potential Chinese market for imported drugs, according to Searle, is worth about £3bn but in 1987 China only imported some £300m worth of drugs and medical devices. Monsanto, the Searle parent, is still losing money on pharmaceuticals because of high R&D start up costs following the Searle acquisition. But the company should be able to post drugs profits by 1990, according to some analysts.

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CETUS ADVANCES WITH IL-2, SETTLES PATENT SUIT

Us Biotechnology outfits, Cetus and Amgen have settled a patent dispute over genetically engineered interleukin-2. Meanwhile, EuroCetus, the Netherlands-based Cetus subsidiary, has filed for regulatory approval of proleukin interleukin-2 in Europe prior to marketing the anticancer product.

Under the terms of the patent dispute settlement, Amgen is assigning all US and foreign patent rights to Cetus and each firm will have the rights to develop, make and market separately its own interleukin-2 products. With the exception of the US, where Cetus will receive a royalty from Amgen and its licensee Ortho on sales the rights are royalty free.

The deal dismisses the lawsuit pending in the federal district court of Northern Carolina. Commenting on the deal, Robert Fildes, Cetus president and ceo claims the agreement heralds a positive new direction for the biotechnology industry. George Rathmann, chairman and ceo of Amgen, added "our settlement proves that some patent disputes in our industry can be resolved on a business basis in the best interests of both parties."

Fildes also views the filing of the registration application for Proleukin in Europe as a significant advance toward Cetus' goal of being the first firm with a genetically engineered interleukin-2 in the marketplace. The product has been in US and European clinical trials since 1984.

Meanwhile, Cetus has been given the green light from US regulators to start human trials of a new form of interleukin-2 called PEG interleukin-2 which may be more active at lower doses than the regular form.

Trials will start at the university of California at Davis and will be open to patients with various types of metastatic cancer or tumours that have spread beyond their initial site for which no therapy exists.

NKK BUYS RIGHTS TO CELLTECH STRAIN

Nippon Kokan (NKK) has acquired exclusive world rights to purchase an original strain of Escherichia coli, calibacillus, whose DNA has been altered by the UK biotechnology firm, Celltech. NKK has also bought exclusive rights to market essential amino acids that can be manufactured using this recombinant cell.

This is NKK's first step into health care. The amino acids can be used for health foods and transfusion solutions as well as a feed additive for animals. Apparently NKK, an iron and steel company, will use a steel by-product on which the calibacillus will work to produce the essential amino acids.

NKK is buying the calibacillus from Celltech through its agent Sumitomo and will pay royalties to Celltech for the amino acids sold. NKK will develop its own fermentation and cultivation technology and plans to start full-scale production in 1990. Target annual sales are £40m ($74.4m) and royalties could bring Celltech several hundred thousand pounds a year.

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Environment

ICI INVESTS £3M AT BRIXHAM

ICI is to spend £3m ($5.6m) expanding its group environmental laboratory at Brixham in the UK. The company will more than double the laboratory's current floor space with a new building adjacent to existing facilities, to be ready by summer 1989.

Brixham is ICI's main focus of environmental expertise. "The expansion is evidence of the company's commitment to a continuing improvement in the environmental performance of its plants and the safety and environmental compatability of its products," explains Dr. John Lawrence, director of the Brixham laboratory.

The Brixham laboratory designs effluent and waste disposal systems, conducts ecological monitoring and computer modelling of aquatic environments and carries out product testing required by many countries for notification procedures. Such product testing including looking at the physiochemical toxic and biodegradability properties of chemicals.

Brixham has focused most closely on the impact of chemicals in the aquatic environment but now plans to enter the air pollution testing arena.

Lawrence points out that the Brixham laboratory is a cost centre within the ICI group. The laboratory has an annual revenue budget approaching £2.1m and two thirds of this must be met by contract work.

About one third of the work done at Brixham is for non-ICI customers including rival companies under strict secrecy deals.

CFC CUTS ON TARGET, CLAIMS VCI

Manufacturers of aerosol sprays in West Germany will reach their projected goal for cutting chlorofluorocarbon consumption ahead of schedule, according to the chemical industry association VCI.

Last year aerosol producers agreed to reduce the CFC content of their products by more than 75 per cent against the 1976 level to 13,000 ton/year by the end of 1988 and by 90 per cent to 5,000 ton/year by 1990. VCI claims that consumption will be cut by 80 per cent to 10,000 ton/year by the end of the year.

Substitution of other chemicals of CFCs in refrigerating agents is not possible at present, VCI maintains. In response to calls for publication of West German CFC production levels, VCI says that exact figures are not available. But VCI, in collaboration with the federal environment office and CFC users, is attempting to compile realistic data on production.

VCI points to EEC statistics showing that aerosols account for about half of total CFC consumption in member states. VCI adds that "if all EEC countries would reduce CFC use in aerosols sprays to the same extent as German producers, the 50 per cent reduction by 1990 agreed upon in Montreal last year could be realized now."

HULS RHINE SPILL

The State prosecutors office in Bochum, West Germany, is investigating chemical producer, Huls, in connection with a spill of the solvent, isophorone, into the river Rhine.

The spill resulted in suspension of drinking water supplies to Amsterdam on April 17 after Dutch water company, Rijn Kennermerland, found 26 micrograms of isophorone per litre of water in its wells near Lobith, close to the German border. The maximum permissable concentration in Dutch drinking water is 10 micrograms.

Huls has acknowledged that it discovered "temporarily higher concentrations" of the solvent in its waste water on April 13.

JAPANESE PANEL URGES CFC RULES

Japan should regulate domestic production and use of chlorofluorocarbons, according to a panel advising the Japanese environment agency. The 21 member panel of experts, headed by professor Masatoshi Tachi of Gifu university, has also urged the government to implement the Montreal protocol.

Japan produces about 10 per cent of global CFC manufacture. CFCs are particularly important to the Japanese semiconductor industry and this dependence led to a sticking point in the Montreal debate last year.

News About New Projects

JOHN BROWN SIGNS USSR JV, ETHYLENE REVAMPS PLANNED

A major new anglo-Soviet joint venture has been formed between the UK contractor John Brown, a Trafalgar House company, the Soviet production enterprises Kazanorgsintez and Stavropolpolimer and the design institute Giproplast.

The main purpose of the new company, the Anglo-Soviet Engineering and Trading CO (Asetco), is to modernize and expand two high density polyethylene plants at Kazan and Budyennovsk using Union Carbide Corp's most advanced Unipol technology. The cost of the expansion has been estimated at £100m ($187m). Expansion of existing ethylene plant at Budyennovsk is also a part of the plan.

Signed in Moscow on April 15 in the presence of the Soviet minister of the chemical industry Yuri Bespalov, Asetco will be owned 30 per cent by John Brown and 30 per cent by the Soviet partners. Two banks, Morgan Grenfell and Moscow Narodny, will hold the remaining 40 per cent,.

The deal was signed by Allan Gormley, the Trafalgar House director responsible for John Brown, I. Marmilyov, general manager of Stavropolpoliner. N. Yusupov, general director of Kazanorgsintez, V. Gulevski, cheif engineer of Giproplast, John Craven of Morgan Grenfell, and A. Maslov of Moscow Narodny Bank.

Mario Joesler, vice president chemicals and plastics division, signed on behalf of Union Carbide Corp, itself a key player in the deal although not a shareholder.

Preparatory work is already well advanced on the projects for the new company to modernize and expand the polyethylene plants at Budyennovsk and Kazan. Work is expected to start on site in the third quarter of 1988, to increase capacity of the Budyennovsk plant by 100,000 ton/year to 300,000 ton/year and the Kazan plant by 200,000 ton/year to 400,000 ton/year.

The work will be carried out during the regular planned maintenance period so that production will not be interrupted.

In high density polyethylene emphasis will be placed on product used mainly for pipe but also for injection moulding, blow moulding, film, roto-moulding and stretch tape. The density range will be between 0.932-0.960.

Production of linear low density polyethylene will be introduced for the first time in the USSR. It is expected that about 50,000 ton/year of capacity at plants will be devoted to lldPE. The product, whose density range will be 0.916-0.930, used mainly for high strength film.

In addition to providing the most up-to-date technology, Union Carbide Corp will act as Aset co's trading arm and sell between 40-60,000 ton/year of polyethylene from each of the plants to finance the project.

Although in theory Carbide could start selling product straight away from the existing plants, in practice sales will commence in 1990, allowing the Soviet Union to fulfill its quotas.

Due on stream by 1990, the project also involves the expansion of an ethylene plant at Budyennovsk. The 25,000 ton/year naphtha cracker, built by Linde some eight years ago, will be expanded by 100,000 ton/year and adapted to crack a mixture containing 30 per cent LPG and 70 per cent naphtha. Two new furnaces will be added to the existing eight, which will be adapted to handle the new feed. A complete modernization of the control system is also included in the plan.

Linde will provide its technology, basic and detailed engineering and deliver all the hardware and equipment for the project valued at DM120m.

Discussions are also under way with Toyo Engineering/Lummus Crest, original suppliers of the 450,000 ton/year naphtha cracker at Nizhnekamsk, near Kazan to expand the plant. The unit has been running at 400,000 ton/year and the plan is to increase production by between 100-150-000 ton/year. A contract is due to be placed this autumn.

The difference between a compensation and a joint venture-based contract is that in the former the Soviet Union borrows the money to cover the investment and repays it in product, whereas a joint venture sells the project to a group of investors (in this case the banks) until the project is paid for (in this case three years). This is a new financial vehicle which does not burden the sovereign credit of the USSR.

COLOMBIA TO BUILD TEREPHTHALIC ACID UNIT

Monomeros Colombo Venezolanos has announced plans to build a 120,000 ton/year pure terephthalic acid plant in Barranquilla, Colombia to start operation by late-1991.

Output from the plant will be marketed within the Andean pact member countries, namely Colombia (with roughly 45 per cent share of polyester end-use market in the area), Venezuela, Peru, Ecuador and Bolivia.

Pre-engineering/investment and market studies have almost been completed with the help of outside consultants specializing in the product.

If the project is proved feasible, Monomeros will issue invitations to bid by the end of the current year, for the engineering/construction of the facility to companies licensed to offer the technology.

Monomeros currently operates a 23,000 ton/year caprolactam plant soon to be debottlenecked to 27,000 ton/year, a 400,000 ton/year NPK fertilizer plant, a 70,000 ton/year ammonium sulphate unit. All are located at Barranquilla. .

MITSUBISHI IN THAILAND

Japan's Mitsubishi Corp is to invest up to $360m in five petrochemical projects in Thailand. Among the local companies likely to be involved is the Thai unit of Colgate Palmolive.

The planned projects will produce pure terephthalic acid, polypropylene, polystyrene, linear alkyl benzene and styrene monomer, according to sources in Bangkok.

The proposals were made by Nichiji Okuzumi, managing director of Mitsubishi. It is assumed the Japanese firm wants government backing in the form of previleges from the board of investment.

BP PUTS DAVY PLAN ON HOLD IN THE US

BP Chemicals America has announced that it has redirected its project to evaluate the potential for integration of its proprietary maleic anhyride (MA) process with a new Davy McKee technology.

The intention of the Davy project, which has been under evaluation for the last year, was to build a large-scale MA plant. About half the output was to be targeted to the MA market. The remaining capacity would have been used as feedstock for the derivatives produced by the Davy McKee ester hydrogenation process — butanediol, gamma-butyrolactone and tetrahydrofuran.

"This project did not meet our economic requirements", said Doug Campbell, BPCA president. "It will be on hold while we investigate alternative maleic anhydride strategies. We still have great confidence in the competiveness of our MA technology and are very optimistic about recent strides by in-house research toward direct hydrogenation routes to MA derivatives".

"We will also be evaluating investment opportunities outside the US," Campbell said.

"Options for worldwide activity include joint venture in MA or derivatives, and retrofitting acrylonitrile plants to produce maleic — much like we are doing with Mitsui Toatsu in Japan", he added.

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(KNS-ADII)

SEVERAL COMPANIES PLAN NEW STYRENE MONOMER CAPACITY

More details are emerging on several new styrene monomer projects worldwide.

The Turkish trader Penta dis Ticaret has confirmed that it has received the go-ahead for its planned 100,000 ton/year styrene and 60,000 ton/year polystyrene facility at Aliaga, near Petkim's petrochemical complex.

Penta is being assisted by American bankers in this $125m investment. It has received participation proposals from the Japanese trading house Mitsui & Co but says that it would prefer to have full control of the plants.

A decision on technology for the styrene monomer facility (Penta is looking at Monsanto/Lummus and Badger/Cosden) will be taken shortly and construction will begin early next year for completion in 1991.

Petkim, it appears, has enough benzene and ethylene feedstock to supply the 100,000 ton/year styrene unit. Of this 60,000 ton/year will be used to feed the downstream PS unit and the remaining 40,000 ton/year sold to local SBR, resin and paints producers. A small tonnage will be available for export.

The styrene monomer/PS facility will be the first production plant for Penta. For the time being the company has decided to scrap plans to build a methanol plant in a joint venture with the Soviet Union, which it said could not compete with Saudi Arabia in gas prices.

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Factory: Plot No. 194/1, Sokhada Pillage, Tal. Khambat.
(Gujarat)
Phones : 2970/2841

Arco Chemical has confirmed that it is looking at a grassroots styrene monomer plant in Europe and another unit in the US. The European 300-350,000 ton/year plant would use Arco's route to produce propylene oxide which gives ethyl benzene/styrene as by product.

Three locations are being considered for the plant, the company's first in Europe. They are Fos sur Mer in France where Arco is currently commissioning its tertiary butyl aicohol facility, Antwerp in Belgium and an Italian location.

The plan stems from the company's need for more propylene oxide capacity in Europe to supply the polyurethane industry. In the US the new unit would probably be located at the company's Channelview, Texas complex. At present Arco's worldwide styrene capacity is put at 960,000 ton/year.

Norsolar, the chemicals unit of CdF Chimie, is debottlenecking its Carling, France-based styrene monomer facility by 40,000 ton/year. The plant, which has a nameplate capacity of 220,000 ton/year has been running at 210,000 ton/year. On completion by the third quarter of this year this will increase to 250,000 ton/year.

Dow Chemical is understood to be considering a new plant at its Terneuzen, the Netherlands, complex as soon as board approval is received. The company currently has 695,000 ton/year nameplate (650,000 ton/year effective) capacity at the site.

BASF is also planning to add styrene monomer capacity. Other styrene investments in Europe include the previously announced Montedipe, Atochem, Neste and/or Petrofina and ina in Yugoslavia projects.

MARKET INFORMATION

We cannot guarantee the accuracy of the prices published in CHEMICAL WEEKLY as they are based only on the enquiries made by our correspondent — and, as such they are not FIRM PRICES as between a buyer and seller. The prices are published only with a view to giving some ideas of market conditions.

The prices are inclusive of Excise and Maharashtra Sales Tax.

PVA-Toluene Tight

Due to increase in booking prices in the international market Gohesenol-GH-17 & PVA 173 prices have gone up in the Bombay Chemical Market. Toluene, prices went up suddenly. It is quoted Rs. 11.75 per litre. Rest of the chemicals are moving more or less steadily.

In the Dyes Intermediate section MPD showed remarkable increase of Rs. 125 plus Excise plus tax in the market due to short supply.

The dyes section remained steady.

(Prices as on 26th May 1988)

INDUSTRIAL CHEMICALS	Per kg.
Ammonium sulphate	2.00
Ammonium phosphate (Mono)	14.50
Ammonium phosphate (Di)	12.00
Ammonium carbonate (Di)	17.00
Ammonium bicarbonate	4.75
Ammonium chloride	3.40
Ammonium nitrate	3.50
Arsenic white powder	21.00
Acrylamide (Resale)	57.00
Barium carbonate	6.00
Bleaching powder (33% Cl)	3.80
Borax (Granular)	15.00
Borax (Powder)	15.50
Boric acid (Tech.)	21.00
Bisphenol-A	55.00
Butyl carbitol	35.00
Caustic soda (Flakes)	9.00
Caustic soda (Solid)	8.00
Caustic soda (Lye)	7.00
Calcium chloride 70% (solid)	3.25
Calcium chloride 75-80% (fused)	3.50
Calcium chloride 36% (Anhydrous)	5.00
Calcium Carbonate PPT	3.00
Calcium carbonate (Activated)	3.55
Camphor (Indian)	82.00
Cresylic acid	50.00
Cream of Tartar (Tech.)	64.00
Citric acid (Belgium) (Resale)	43.00
Citric acid (Indian) (Resale)	42.50
Copper sulphate	17.60
Chromic acid	50.00
Cyanuric chloride	120.00
Cobalt oxide	280.00
Carbitol	50.50+ST

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PHOSPHORIC ACID

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Bombay-400 002.
Tel : 259733/292218;
Tlx : 011-4149 DRUG

Dicalcium phosphate (Anhydrous)		16.00
Ferric Chloride (Lumps)		7.00
Ethylene urea		56.00
Glue flakes		8.45
Glue sheets		6.75
Gohsenol GH-17		92+ST
Hydro	(Resale)	38.00
Hyflosupercell		20+ST
Hexamine	(Resale)	35.00
Industrial Wax		25.00
Litharge		15.00
Lead Acetate (Tech.)		28.50
Lithopone		15.50+ST
Magnesium chloride (crystal)		1.80
Menthol crystal (Flakes)		185+Ex.+ST
Menthol bold		205+Ex.+ST
Menthol crystal bold		245+Ex.+ST
Magnesium carbonate (Japan)		16.00
Magnesium carbonate (Indian)		15.00
Maleic Anhydride (per kg)	(Resale)	45.00
Mercury (75 lbs.)		9,000.00
Nickel chloride		90.00
Oxalic acid	(Resale)	20.00
Peppermint oil (Rectified)		90+Ex.+ST
Potassium carbonate (Indian)		19.00
Potassium carbonate (Imported)		21.00
Potassium bichromate		22.00
Potassium phosphate (Mono)		14.00
Potassium phosphate (Di)		14.00
Polyvinyl alcohol (No. 117)		88.00
Polyvinyl alcohol (No. 173)	(Resale)	104.00
Polyvinyl alcohol (No. 208)		100.00
Paraformaldehyde	(Resale)	21.00
Phthalic anhydride 36%	(Resale)	24.00
Pentaerythritol	(Resale)	51.00
Paraffin wax	(Resale)	14.50
Rangolite (German)		70.00
Rangolite (Czech.)		50.00
Sodium sulphate (Fine)		6.00
Sodium sulphate (Coarse)		5.00
Sodium sulphide 50-52% (Flakes)		8.00
Sodium sulphide 58-60% (Flakes) (TCL)		21.00
Sodium sulphide pure (Flakes)		12.25
Sodium nitrite	(Resale)	16.00
Sodium chlorite 80% (Spain)		94.00
Sodium chloride 50% (Spain)		81.00
Santobrite (Indian)		36.00
Soda Ash (Tata)		4.00
Soda Ash (Birla)		3.80
Soda Ash (Imp.)		3.50
Sodium bicarbonate		5.25
Sodium bisulphite		4.50
Sodium silicate		3.00
Sodium acetate		6.00
Sodium alginate		108+ST
Titanium Dioxide (Anatase)		50+ST
Titanium Dioxide (Rutile — RCR_2)		69+ST
Tartaric acid (Crystal)		94.00
Trisodium phosphate		4.80
Thiourea		70+ST
Urea (Tech)		2.75
Vacuum salt		1.00
Zinc Dust		30.00
Zinc Oxide		30.00
Zinc chloride powder (technical)		14.00
Zinc sulphate		4.00

SOLVENTS		Per kg.
Acetic Acid (Glacial)	(Resale)	13.50
Acetic Anhydride	(Resale)	30.00
Acetone	(Resale)	13.50
Adipic Acid		51+ST
Aceto Acetanilide		50.00
Aniline Oil	(Resale)	42.00
Benzoate Plasticiser		33.00
Butyl Acrylate		108+ST
Butyl acrylate		95+ST
Butyl stearate		36.00
Butanol	(Resale)	34.00
Benzyl chloride		24.00
Benzo trichloride		16.00
Benzoyl chloride		22.00
Bromine Liquid		42.50
Chloroform		24.50
Carbon Tetrachloride		13.00
Cellosolve		42+ST
Cyclohexanone		50+ST
Cyclohexanol		43.00
Diacetone	(Resale)	35.00
Diethyl Oxalate		34.00
Diethylene glycol (DEG)		39.00
Dioctyl Phthalate		52.00
Diallyl Phthalate		56.00
Dimethyl Phthalate		28.00
Dioctyl Adipate		52.00
Dibutyl Adipate		42.00
Dipentene		15.00
Dimethylamine 40%		12.00
Dimethylamine 60%		14.00
Ethyl Acetate		20.50
Ethyl Acrylate		46.00
Ethylene Dichloride		11.00
Ethylene Glycol		23.25
Formic Acid (Imp)	(Resale)	27.50
Formaldehyde	(Resale)	7.75
Glycerine (CP)		50.00
Glycerine (IW)		49.00
Hydrogen peroxide 50%	(Resale)	28.50
Isopropyl Alcohol		17.50
Iso Butyl Alcohol		28.00
	(Resale)	30.00
Monoethanolamine	(Resale)	49.00
Melamine		48+ST
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Methyl Dichloride	(Resale)	23.00

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Polyethylene Glycol (6000)	50.00
Para Cresol	40.00
Styrene monomer	44-ST
Sorbitol	18.50
Sulphuric Acid	2.10
Trichloroethylene	27.00
Triethanolamine (Resale)	49.00
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Turkey Red Oil (50%)	11.75
Triethylamine	50.00
Vinyl Acetate Monomer	41.00

SOLVENTS	Per Litre
Benzene	10.00
N-Heptane	8.00
N-Hexane	8.75
Methanol	8.25
Solvent Naphtha Heavy	10.50
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Meta Ureido Aniline	140.00
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Resorcinol	142.00
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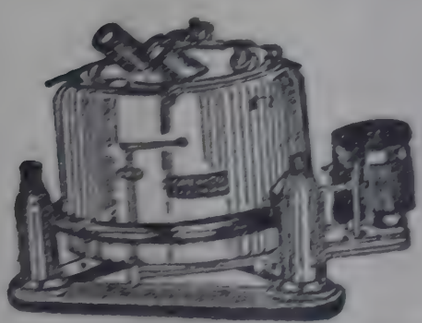

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Bombay dyes market

(Prices as on May 26th 1988)

ACID COLOUR	Per Kg.
Acid Violet 4BS	143.00
Acid Maroon V	110.00
Acid Orange II	77.80
Acid Orange IIY	63.05
Acid Red A	107.25
Crosein Scarlet MOO	155.00
Acid Scarlet 3R	99.90
Acid Red 38N	135.00
Acid Red R2R	132.00
Acid Red RS	88 00
Acid Green V	230.00
Acid Patent Blue AS	250.00
Acid Coomasi Blue	200.00
Acid Yellow 5GN	65.00
Acid Red PG	85.00
Acid Red GRS	78.00
Acid Black 10 BX	121.95
Acid Black BX	98.40
Acid Black Wax	135.50
Procinil Yellow GS (ICI, UK)	265.00
Procinil Red GS (ICI, UK)	530.00
Procinil Blue RS (ICI, UK)	315.00
Procinil Scarlet G (ICI, UK)	600.00
Procinil Orange G (ICI, UK)	250.00
Procinil Rubine (ICI, UK)	550.00

DIRECT COLOURS	Per Kg.
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Gun Yellow RCH	124.00
Fast Yellow GCH	141.15
Yellow CFG Hly. Conc.	312.00
Fast Yellow GS	111.65
Fast Yellow CHRS	95.45
Viscose Orange A	166.15
Fast Orange GR	133.75
Red	96.90
Dark Tan	78.25
Red IIR	72.55
Red 4B	169.10
Bordeaux BW	132.30
Fast Scarlet 4BS	166.55
Red 12B	170.55
Bordeaux Hly. Conc.	194.00
Cotton Red N	117.05
Brill. Fast Helio B	278.00
Brill. Fast Helio 2B	297.00
Brill. Fast Helio 2RS	136.20
Brill. Fast Helio BS	116.10
Brill. Violet Extra	126.40
Blue 2B	86.60
Blue G	170.50
Sky Bue FB	188.25
Copper Blue GR	147.00
Fast Greenish Blue GL	114.60
Developed Black BT	116.10
Blue NB-2B	300.20
Blue NB-2BC	185.30
Developed Black NB-GHB	185.30
Green B	111.65
Green NB-B	188.25
Green 2B-N	188.25
Brown MR	154.40
Brown CN	107.25
Golden Brown G	140.35
Catechin G	120.50
Omega Tan	126.40
Catechin GS	102.80
Black E Hly Conc.	142.60
Black E Extra Hly. Conc.	142.60
Black NB-ER Hly. Cone.	310.50

DISPERSOL COLOURS	Per Kg.
Yellow 6G Powder	143.80
Red B 3B Powder	247.80
Red B 2B Powder	323.20
Red CB Powder	439.15
Red D2B Powder	477.40
Violet C 4R	521.90
Blue BG Powder	235.45
Blue BN Powder	103.75
Blue D 2R Powder	476.25
Navy BT Powder	243.90
Blue B 2G Powder	210.20
Black BT Powder	182.60
Blue BR Powder	390.20
Yellow 7GL	338.60
Yellow 5RX	218.80
Yellow 3G	367.25
Yellow	140.00
Yellow AL	135.30
Yellow Brown REL	247.50
Yellow FFL	463.60
Gold Yellow GG	259.70
Pink REL	247.00
Red REL	468.65
Red 2B	327.40
Red FB	324.20
Red Violet FBL	469.85
Orange 3R	196.65
Violet 3R	280.00
Violet RL	275.45
Violet 6R	485.75
Scarlet RR	214.80
Rubine 3B	223.00
Rubine CB	364.90
Blue GL	318.90
Blue BGF	636.50
Navy Blue RF	270.40
Brown 3REL	200.40
Black GEL	324.20
Dark Brown 3B	317.40

BASE COLOURS	Per Kg.
Fast Yellow GC	80.20
Fast Orange GC	135.45
Fast Scarlet R	166.90
Fast Scarlet RC	126.65
Fast Scarlet RCR	99.05
Fast Scarlet G	121.65
Fast Scarlet GN	91.50
Fast Scarlet GG	72.70
Fast Scarlet GGS	72.75
Fast Red B	203 20
Fast Red RC	119.15
Fast Red R Flakes	149.25
Fast Red TR	166.80
Fast Red TR Oil	183.15
Fast Red RL	237.10
Fast Red KB Oil	201.90
Fast Bordeaux GP	201.95
Fast Garnet GBC	94.00
Fast Violet B	505.60
Fast Blue BB	521.40

NAPHTHOL COLOURS	Per Kg.
ASG	217.00
AS	143.00
ASSW	.279.75
ABBS	189.15
ASBO	195.65
ASD	175.50
ASOL	179.35
ASTR	279.75
ASPH	279.75
ASE	196.05
ASEI	184.40
ASLB	1632.60
ASBT	1817.00
ASWG	143.00
ASSG	397.70
ASSR	480.50

PROCION COLOURS	Per Kg.
Golden Yellow HR	181.80
Brill. Yellow H4G	117.85
Supra Yellow H-8GP	168.55
Brill Yellow HE6G	166.95
Yellow H-E4R	276.05
Brill. Yellow H7G	332.30
Yellow M4R	243.95
Yellow M GR	326.05
Brill. Yellow M4G	177.10
Brill. Yellow M8G	332.30
Yellow M 3R	217.60
Brill. Orange H 2R	241.85
Brill. Red H 7B	157.95
Brill. Orange M 2R	313.15
Brill. Red H 8B	169.45
Brill. Scarlet H RN	245.05
Supra Red H-3BP	179.30
Brill. Red H-F3B	243.45
Brill. Magenta HB	167.00
Brill. Red M 5B	98.90
Brill. Red M 8B	173.70
Brill. Pink MB	137.10
Brill. Magenta MB	121.55
Brill. Purple H-3R	180.20
Brill. Purple H-7R	175.40
Navy Blue H 3R	298.50
Brill. Blue H-GR	366.55
Brill. Blue H 5G	173.10
Blue H 5R	283.85
Brill. Blue H 7G	178.70
Brill. Blue H 7RX	358.15
Turquoise HA	234.45
Supra Blue H-3RP	335.70
Supra Turquoise H 2GP	181.50
Blue H-ERD	305.80
Navy Blue H ER	258.60
Blue H 5RX	269.30
Navy Blue M 3R	310.95
Brill. Blue MR	331.70
Brill. Blue M RX	214.20
Brill. Blue M-G	382.30
Blue M 4GD	344.60
Navy Blue M RB	318.75
Turquoise M-G	197.85
Brill. Blue M GX	302.50
Blue 3R Acra Powder	718.20
Dark Brown H 6R	248.45
Cobalt Oxide (per kg.)	285.00
Green H 4BD	269.80
Green H-E4BI	169.80
Red Brown H IF	143.25
Orange Brown H 28	209.05
Brown M GRN	188.80
Black H-N	283.35

SULFUR COLOURS	Per Kg.
Navy Blue	99.85
Green G	198.55
Black Grains Extra	63.05
Black Grains OG	64.55
Black GXE Conc.	61.60
Black GXE	52.75
Black GXR	61.60
Black Grains 800	54.20
Black EXR Grains	64.55
Black EXR Grains 800	51.25

VAT COLOURS (ICI)	Per Kg.
Yellow 5G Powder Fine	673.15
Yellow 5G Supra Disperse	439.30
Yellow 5G Acra Con.	628.75
Yellow 3R Powder	588.85
Gold Orange 3G Pdr. Fine	952.15
Brill. Orange 6R Pdr. Fine	624.35
Gold Orange 3G Supra Disp.	601.30
Brill. Orange 6RX Powder	394.30
Brill. Red 3B Pdr. Fine	997.80
Brill. Red 3B Supra Disp.	713.20
Brill. Purple 4R Conc. Pdr.	470.75
Brill. Purple 3R Acra Powder	690.85
Brill. Purple 2R Hly Conc.	597.90
Brill. Purple 4R Supra Disp.	500.05
Brill. Purple 2R Acra Conc.	625.95
Blue R Powder Fine	542.15
Blue BC Conc. Pdr. Fine	522.50
Blue BC Acra Conc. Pdr. Fine	762.70
Blue R Conc. Pdr. Fine	577.65
Blue RR Supra Powder	629.35
Blue Conc. Powder	645.80
Brill. Blue 2R Hly. Conc.	378.55
Brill. Blue 2R Supra Disp.	115.65
Dark Blue 2R Powder Fine	389.25
Blue BC Supra Disp.	359.40
Jade Green XBN Powder Fine	438.20
Jade Green XBN Acra Conc. Powder	823.90
Jade Green 2G Pdr. Fine	419.65
Jade Green 2G Ptg. Faste	125.40
Jade Green XBN Ptg. Paste	126.00
Jade Green 2G Supra Disp.	496.00
Olive Green B Pdr. Fine	399.90
Olive D Pdr. Fine	444.30
Olive Green B Supra Disp.	308.26
Jade Green XBN Supra Disp. (N)	327.30
Olive OMW Pdr. Fine	698.55
Olive OMW Supra Disp.	538.05
Olive R. Pdr. Fine	422.96
Olive D Supra Disp.	361.70
Olive R Supra Disp.	363.90
Olive D. Ptg. Paste	193.00
Olive Green B. Ptg. Paste	199.10
Olive Green B Acra Conc.	542.75
Olive R Acra Conc.	640.00
Olive Green B Acra Conc.	542.75
Brown R Pdr. Fine	835.00
Brown G. Pdr. Fine	795.00
Brown R Pdr. Fine	659.75
Dark Brown 3R Pdr Fine	685.00
Brown G. Supra Disp.	449.90
Brown 2G Supra Disp.	554.00
Brown R Supra Disp.	422.95
Brown BR Powder	719.00
Dark Brown 3R Ptg. Paste	217.15
Dark Brown 3R Supra Disp.	414.55
Brown G Acra Conc.	733.95
Brown R Acra Conc.	766.00
Grey M. Powder Fine	768.80
Grey M. Supra Disp.	585.45
Blue BC Acra Conc. Pdr. Fine	762.70
Direct Black AC Supra Disp.	330.35
Direct Black AC Pdr. Fine	474.70
Direct Black CH Supra Disp.	393.20
Direct ACD Ptg. Paste	217.15

Madras Market

Markets were generally dull. There has been spurt in the Hydros prices as most of the plants were closed for want of raw materials. The local manufacturing unit had also taken up their regular maintenance shutdown now. Soda ash prices registered a fall due to poor demand and plentiful supplies. Titanium Dioxide prices maintained a steady level due to poor demand from consumers. There were good inquiries for Sodium Cyanide. The Handloom Units in the south are reported to have received good export orders and for the next six months there will be good activity in Dyes and Chemicals going to Handloom industry in the South.

(MADRAS MARKET RATES AS ON MAY 26, 1988)

Acetic Acid — Glacial (per kg)	17.00
Acid Slurry (Soft) (per kg)	26.00
Aluminium Sulphate Iron free (per tonne)	1,700.00
Ammonium Bi-carbonate (per 25 kg.)	125.00
Ammonium Chloride SPIC (per tonne)	1800.00
Bleaching Powder — Mettur (per 25 kgs. bags)	100.00
Borax Granular	650.00
Cresylic Acid 100% (per kg)	85+E.D
Meta Cresol 40/42% (per kg)	47.00+E.D
Para Cresol 80/85% (per ton)	60+E.D
Caustic Soda Flakes (Mettur) (per ton)	8,400.00
Caustic Soda Flakes (Andhra Sugar)	8,400.00
Citric Acid — Indian (per kg)	45.00
Copper Sulphate (per 50 kg.)	1000.00
Formic Acid (India) (per kg)	27.00
Formaldehyde (per kg)	8.00
Glycerine (per kg)	42.00
Hydrosulphite of Soda TCPL (per kg)	36.00
Hydrosulphite of Soda IDI (per kg)	38.00
Hydrosulphite of Soda BASF (per kg.)	38.00
Hydrogen Peroxide (India) (per kg.)	35.00
Hyflo Supercell	19.50
Magnesium Carbonate Light	18.00
Potassium Bichromate (per kg)	26.00
Phosphoric Acid (per kg)	18.00
Phthalic Anhydride (per kg)	24.00
Pentaerythritol (per kg)	62.00
Paraffin Wax (per kg)	13.50
Oxalic Acid (per kg.)	20.00
Soda Ash (TAC) (per 75 kg)	308.00
Soda Ash (TATA) (per 75 kg)	310.00
Sodium Cyanide Indian (per kg.)	47.00
Sodium Cyanide Degussa (per kg)	70.00
Sodium Bichromate (per kg)	19.00
Sodium Bicarbonate (per 50 kg)	280.00
Sodium Nitrite (per 50 kg)	720.00
Sodium Nitrate (per 50 kg)	430.00
Sodium Silicate (per tonne)	4000.00
Sodium Sulphate (per tonne)	3500.00
Sodium Sulphide Flakes (per tonne)	13,000.00
Sodium Bi-sulphite (per 50 kg)	185.00
Stearic Acid (per kg)	32.00
Trisodium phosphate (per 50 kg)	380.00
Titanium Di-oxide Indian TTP (per kg)	48.00
Titanium Di-oxide Indian Rutile (per kg)	58.00
Urea Tech (per tonne)	2800.00
Zinc Oxide (per kg.)	34.00
Zinc Chloride Powder (per kg.)	13.00
Zinc Sulphate (per tonne)	4250.00
Di-octyl phthalate (per kg.)	47.00
Di-butyl Phthalate (per kg)	47.00
Hexamine (per kg)	28.00

SOLVENTS

Acetone (H.O.C.) (per kg)	15.50
Isopropyl Alcohol NOCIL (per kg.)	21.60
Diacetone Alcohol NOCIL (per kg)	26.50
Benzene SAIL (per kg)	15.00
Diethylene Glycol NOCIL (per kg)	33.00
Butanol NOCIL (per kg)	34.00
Toluene SAIL (per litre)	12.00
Xylene IPCL (per litre)	14.00
Phenol HOC (per kg)	30.00
Turpentine (per litre)	16.50
Sorbitol (per kg)	35.00
Trichloroethylene MCIC (per kg)	23.50
Carbon Tetra Chloride (per kg)	15.50
Chloroform (per kg)	26.00
Methylene chloride (per kg)	25.00
Methyl Ethyl Ketone (per kg.)	42.00
Cellosolve (per kg)	50.00
Triethanolamine (per kg)	23.50
Ethyl Acetate (per kg.)	22.00
Butyl Acetate (per kg)	40.00
Methanol (per litre)	9.00

Delhi Market

DELHI : May 27, (NNS) — A sharp fall of Rs. 200 in tartaric acid provided the main feature of trading in the local chemicals market during last week says NNS. Citric acid, hexamine and sodium nitrite also reacted downwards, whereas parafin wax looked up by Rs. 20 in the absence of arrivals from Assam due to flood. Turnover was moderate.

Tartaric acid suffered a steep fall of Rs. 200 at Rs. 6500 per 50 kg. thanks to increased import from France along with fall in demand due to paucity of money. In the last week of January, 1988 tartaric acid was sold higher at Rs. 7250.

Hexamine depressed from Rs. 42 to Rs. 35 on improved supply. Citric acid inferior declined by Rs. 50 at Rs. 2050 per 50 kg. in the absence of enquiries, whereas citric acid bold (Bombay Dyeing) ruled static at Rs. 2400.

Sodium nitrite slumped further by Rs. 50 at Rs. 725/750 on account of dehoarding tendency by stockists caused by acute shortage of money. In the third week of March its prices recorded a new peak level of Rs. 1200/1300. Sodium nitrate however ruled easy at Rs. 400/425.

Paraffin and refined wax jumped up sharply by Rs. 20 each at Rs. 600 and Rs. 700 due to suspension of supply line from Assam caused by flood. Its prices may rise further caused by acute shortage of stocks. Hydrogen peroxide shot up from Rs. 23 to Rs. 30/32 per kg. in the face of sustained demand by textile and leather units as well as fall in supply of imported and indigenous goods.

Caustic soda flake hardened by Rs. 5 at Rs. 405/410 due to reacted supply by manufactures. Soda bicarb and soda ash also ruled static at Rs. 260/280 and Rs. 270/300 on sustained seasonal demand. Sodium hydro sulphite Damosha and Tamil Nadu firmed up by 50 paise at Rs. 38.50 each per kg on tight supply. Kalkai hydro were on demanded at Rs. 40. Stock position was also neligible.

Menthol flake hardened from Rs. 174 to Rs. 178 owing to reacted arrivals but later owing to fall in demand by stockists it reacted downward and closed at Rs. 171 yet showing a fall of Rs. 3 After an initial firmness menthoi medium and bold ruled static at their previous level of 184 and Rs. 190. Mentha oil ruled quite at Rs. 135.

Dyes and colours remained unchanged at their previous level. Turnover throughout the week was poor due to shortage of power caused by extreme hot weather.

(DELHI MARKET RATES AS ON MAY 27, 1988)

Ammonia Bicarb (per 25 kg)	118.00
Mercury (per flask)	10,500.00
Soda ash (per bag)	270-300.00
Ammonium chloride (per 50 kg)	115-180.00
Caustic soda solid	No Stock
Caustic soda flakes (per 50 kg.)	405-410.00
Citric acid (per 50 kg)	2050-2400.00
Stable Bleaching Powder Shriram (per 25 kg)	95.00
Stable Bleaching Powder KCI (per 25 kg)	85.00
Stable Bleaching Powder MODI (per 25 kg.)	90.00
Sod. Bicarbonate (per 50 kg)	260-280.00
Sod. Hydro Sulphite (per kg)	38.50
Rangolite (per kg)	48-65.00
Boric acid Technical (per 50 kg)	980.00
Paraffin wax (per 50 kg)	600.00
Tartaric acid (per 50 kg)	6,500.00
Borax Granular (per 50 kg)	575.00
Borax Crystal (per 50 kg)	600.00
Sodium Nitrate (per 50 kg)	400-425.00
Sodium Nitrite (per 50 kg)	725-750.00
Camphor Powder (per kg)	87.00
Camphor Thal (per kg)	97.00
Menthol Medium (per kg)	184.00
Menthol Flakes (per kg)	171.00
Menthol Bold (per kg)	190.00
Glycerine (per kg)	42-43.00
Sodium Silicate (per quintal)	200-250.00
Hexamine (per kg)	35.00
Acetic Acid Glacial (per kg)	13-13.50
Copper Sulphate (per quintal)	1800-2100.00
Formic acid (per kg)	26.50
Formaldehyde (per kg)	8.00
Hydrogen Peroxide (per kg)	30-32.00
Calcium Carbonate (per tonne)	2500-4000.00
Acid Slurry Soft (per kg)	22.00
Acid Slurry Hard (per kg)	30.00
Phosphoric Acid (per 50 kg)	825.00
Pot. Nitrate (per quintal)	900-1200.00
Pot. Permanganate (per 50 kg)	2300.00
Sod. Bichromate (per 50 kg)	1050-1150.00
Tri-Sod. Phosphate (per 50 kg)	325-360.00
Titanium Dioxide Anatase (per kg)	48.50
Titanium RC-822 (per kg)	63.00
Zinc Oxide (per mt)	35,000-40,000.00
Phenol Carbolic Acid (per kg)	33.00
Carbon Tetrachloride (per kg)	19.00
Chloroform (per kg)	28.00
Sodium Sulphate (per 50 kg)	160-170.00
Naphthalene Balls (per 50 kg)	1400.00

DYES & COLOURS	per kg
Naphthol AS	150.00
Naphthol ASG	235.00
Naphthol ASBS	200.00
Naphthol ASTR	302.00
Naphthol ASOL	191.00
Naphthol ASBO	208.00

DIRECT DYES	(per kg)
Black E. Conc.	92-155.00
Diazo Black B.T.	125.00
Green B.	119.00
Blue 2-B	86.00
Sky Blue FB	200.15
Basic Auramine O' Conc.	55-100.00
Basic Rhodamine B.500%	220-320.00
Basic Methylene Blue	92-130.00
Basic Violet	142-160.00
Basic Malachite Green	160-185.00
Acid Orange	45-52.00

MATERIALS IMPORTED

BOMBAY
(From 25.1.88 To 28.1.88)

ACETIC ANHYDRIDE MIN 98% : From FRG : Triochem Products Ltd., 30,400 kgs., Rs. 2,99,965.

ACRYLIC ACID : From Japan : Aquapharm Chem Co. P. Ltd., 10,000 kgs., Rs. 2,17,275.

ADIPIC ACID : From Australia : The Raymond Woollen Mills Ltd., 23,000 lbs., Rs. 1,62,535.

ALDEHYDE : From Switzerland : Hindustan Lever Ltd., 675 kgs., Rs. 2,44,326.

ALDEHYDE C-9 : From Hong Kong : Bharat Photocircuits Ltd., 523.8 kgs., Rs. 1,36,551.

ALDEHYDE C-11 : From Switzerland : The Tata Oil Mills Co. Ltd., 30 kgs., Rs. 19,928.

ALPHA ACETOGAMMA BUTYRO LACTONE : From Saudi Arabia : Universal Lugg. Mfg. Co. Ltd., 15,000 kgs., Rs. 13,68,421.

D (—) ALPHA - PHENYL-GLYCINE CHLORIDE HYDRO-CHLORIDE : From Netherlands : Lyka Labs. Ltd., 1,015 kgs., Rs. 3,37,810.

DL - 2 - AMINOBUTANOL : From FRG : Cadila Laboratories Pvt. Ltd., 7,000 kgs., Rs. 7,94,460.

L-AMINO-DIOL : From China : Umediea Laboratories Pvt. Ltd., 1,000 kgs., Rs. 5,58,280.

AMMONIUM PERSULPHATE : From Japan : Sehrader Scovill Duncan Ltd., 2 Mts., Rs. 31,511.

AMYL ALCOHOL : From Korea : Panchmal Plastics P. Ltd., 25.85 Mts., Rs. 3,73,331.

ANETHOLE : From France : Besta Cosmetics Ltd., 300 kgs., Rs. 1,62,433.

ANISIC ALDEHYDE : From USA : International Industries, 25 kgs., Rs. 8,052.

ANTIMONY TRIOXIDE : From Switzerland : Century Enka Ltd., 200 kgs., Rs. 40,229.

AROMATIC CHEMICALS : From Canada : Agradoot, 100 kgs., Rs. 1,27,825 ; From USA : International Industries, 25 kgs., Rs. 11,323 ; 50 kgs., Rs. 11,575.

ARSENIC TRIOXIDE : From Malaysia : Singapore Brothers, 7,800 kgs., Rs. 43,039 ; From Saudi Arabia : Polyset Plastics Pvt. Ltd., 10,700 kgs., Rs. 59,041.

ATRAZINE TECHNICAL : From UK : Rallis India Ltd., 39,990 kgs., Rs. 18,64,272 ; 39,990 kgs., Rs. 18,64,290.

BASONYL BLUE 636 : From FRG : Sharp Stationery Products, 25 kgs., Rs. 11,097.

BIS METHYL UREA : From FRG : Max India Ltd., 5,040 kgs., Rs. 9,23,983.

BISPHENOL-A : From Brazil : K Uttamlal (Exports) Ltd., 15,000 kgs., Rs. 2,46,174.

BRIGHT YELLOW SULPHUR : From Kuwait : The National Rayon Corpn., 2,000 Mts., Rs. 31,28,919.

N-BUTANOL : From FRG : Polyolefins Ind. Ltd., 34,080 Rs. 3,58,403 ; From USA : Raj Prakash Chemicals Ltd., 13,104 Mts., Rs. 1,41,210.

N-BUTENE : Jindal Strips Ltd., 74.750 Mts., Rs. 15,24,936.

BUTYL ALCOHOL: From UK: SRSK Chemicals ; 9,990 kgs., kgs., Rs. 1,10,248., 53,820.

BUTYL ALCOHOL: From UK: SRSK Chemicals : 4,810 kgs., Rs. 53,082.

BUTYNE DIOL : From FRG: Grauer & Weil (I) Ltd., 1,003 kgs., Rs. 1,10,248.

CALCIUM D-PANTOTHENATE BP/USP : From Chicago: RT International, 2,500 kgs., Rs. 4,38,185.

CALCIUM D-PANTOTHENATE USP : From UK : Abbott Laboratories Ltd., 1,000 kgs., Rs. 1,75,274.

CALCIUM SILICIDE : From France : Modi Industries Ltd., 6,000 kgs., Rs. 1,25,735.

CARBON BLACK : From Czechoslovakia : United Brothers, 80 kgs., Rs. 14,993 ; From FRG : Asian Cables Corporation Ltd., 1,200 kgs., Rs. 49,154.

CARNAUBA WAX: From Brazil : Nanavati Engg. Co. Pvt. Ltd., 250 kgs., Rs. 8,569; 500 kgs., Rs. 10,426. Standard Chemical Co., 3 Mts., Rs. 72,836.

L-CARVONE : From France: Besta Cosmetics Ltd., 1,000 kgs., Rs. 3,24,612 ; From FRG : Technocraft Industries, 50 kgs., Rs. 13,635.

CHROMOTROPIC ACID: From FRG : Sandoz India Ltd., 920 kgs., Rs. 2,04,645.

CLOVE LEAF OIL : From Czechoslovakia : Naresh Paper Bag Co., 1,000 kgs., Rs. 32,650.

CLOVE OIL DD : From France : Besta Cosmetics Ltd., 150 kgs., Rs. 8,236.

CYCLOHEXANONE : From FRG : Pragati Chemicals Pvt. Ltd., 8,000 kgs., Rs. 1,32,127.

N-CYCLOHEXYL 2-BENZOTHIAZYL SULPHONAMIDE : From Korea : Puneet Resins Pvt. Ltd., 3 Mts., Rs. 62,320.

DANE SALT : From Singapore : Cepham Laboratories Ltd., 2000 kgs., Rs. 4,67,397 ; Kopran Chemical Co. Ltd., 2,000 kgs., Rs. 4,73,889.

DDVP TECHNICAL 99% : From Austria : Govt. of India, 750 kgs., Rs. 24,344.

DICHLOROANILINE : From Romania : Prakash Pipes & Industries, 500 kgs., Rs. 1,88,251.

N,N DIETHYLANILINE : From UK : Sudarshan Chemical Indus. Ltd., 950 kgs., Rs. 43,600.

DIETHYLENE DIAMINE TECH : From Sweden : Tradechem Corporation, 4,370 kgs., Rs. 1,29,412.

DIETHYLENE GLYCOL : From Taiwan : Ganesh Benzoplast Ltd., 18.7 Mts., Rs. 1,39,868.

DIETHYL SULPHATE: From Japan : Shreepak Enterprises, 9,200 kgs., Rs. 1,64,481.

DIMETHYL CARBONATE : From France : Kemwell Pvt. Ltd., 10,000 kgs., Rs. 2,82,533.

DIOCTYL PHTHALATE : From Korea : Oswal Cable Products, 40 Mts., Rs. 4,62,152 , Prakash Pipes & Industries, 20 Mts., Rs. 2,31,676.

DIOCTYL PHTHALATE : From USA : Camta Enterprises, 20 Mts., Rs. 2,31,076.

DIPHENYL METHANE: From FRG : Shakti Insulated Wires P. Ltd., 5,000 kgs., Rs. 3,14,302.

DIPHENYL OXIDE : From Brazil : Zarhak Entp. 62,052 kgs., Rs. 13,53,480.

DIPROPYLENE GLYCOL : From USA : Rallis India Ltd., 8,101 kgs., Rs. 89,401.

EMULSIFIABLE POLYETHYLENE WAX : From Pakistan : S. A. Bassam, 5,500 kgs., Rs. 1,10,682.

EPICHLOROHYDRINE: From FRG : Cibatul Ltd., 69,920 kgs., Rs. 14,79,695.

ETHOXY METHYLENE MALONIC ACID ESTER : From FRG : IPCA Laboratories Pvt. Ltd., 4,000 kgs., Rs. 6,07,616.

N-ETHYLANILINE : From USA : Navin Chemical Enterprises, 32,300 lbs., Rs. 4,61,295.

N - ETHYL - N - CYANOETHYLANILINE : From UK : Sandoz India Ltd., 5,600 kgs., Rs. 1,91,326.

ETHYLENE GLYCOL MONOETHYL ETHER : From FRG : Bagalkot Udyog Ltd., 3.8 Mts., Rs. 40,115 ; Kelvinator of India Ltd., 3.8 Mts., Rs. 40,115.

2-ETHYL HEXYL ACRYLATE : From Saudi Arabia : United Pulp & Paper Mills Ltd., 5,400 kgs., Rs. 1,04,464.

FUMED SILICA : From Australia : Wellman (H) Pvt. Ltd., Rs. 57,101.

FURFURYL ALCOHOL: From Saudi Arabia : Diamond Polyplast P. Ltd., 1,680 kgs., Rs. 37,080.

GAMMA FERRIC OXIDE : From Japan : Images Color Processing Labs Ltd., 36,000 kgs., Rs. 29,44,600; From USA : Aron Chemicals Bombay Ltd., 18,000 kgs., Rs. 14,72,300.

GLYCERINE : From Australia : Coral Cosmetics Pvt. Ltd., 20,020 kgs., Rs. 3,37,565 ; From Australia : Parke Davis Ltd., 20 Mts., Rs. 3,37,564 ; From BAN : Beck & Co. Ltd., 32,000 kgs., Rs. 5,62,397 ; 16,000 kgs., Rs. 2,81,198.

GLYCERINE MINIMUM 99.5% BP/USP : From FRG : Burroughs Wellcome (India) Ltd., 16,640 kgs., Rs. 2,86,389.

GUM BENZOIN : From FRG: Phiroze Sethane P. Ltd., 4,800 kgs., Rs. 38,688.

GUM ROSIN N GRADE : From China : Ballarpur Industries Ltd., 99.9 Mts., Rs. 6,26,598. From Taiwan : Minicomp Pvt. Ltd., 17.550 Mts., Rs. 1,21,342.

GUM ROSIN OFF GRADE : From Hong Kong : Diamond Laboratories, 40.05 Mts., Rs. 2,36,137.

GUM ROSIN WW GRADE : From USA : Sanghvi Brothers, 16.65 Mts., Rs. 1,14,571.

HEDIONE : From Switzerland : The Tata Oil Mills Co. Ltd., 350 kgs., Rs. 1,63,454.

HEXYNE DIOL : From FRG: Grauer & Weil (I) Ltd., 1,100 kgs., Rs. 1,08,907.

HYFLO SUPERCEL : From UAE : Killick Nixon Ltd., 18.950 Mts., Rs. 1,05,794.

IMIDAZOLE : From FRG : Grauer & Weil (I) Ltd., 100 kgs., Rs. 14,626.

IODINE CRUDE : From Japan : Niran Fine Chemicals, 1,000 kgs., Rs. 2,28,895.

IODINE CRUDE 99% PURITY : From Singapore : Kalyani Sharp India Ltd., 5,400 kgs., Rs. 12,44,444.

IODINE CRUDE : Warden & Co., (India) P. Ltd., 1,000 kgs., Rs. 2,29,154.

IRON OXIDE RED : From FRG : Asi[illegible]dia Ltd., 10,000 k[illegible] 1,91,574

ISOBORNYLCYCLOHEXANOL : From USA : American Consulate General, 2,000 kgs., Rs. 2,94,720.

ISOBUTYL BENZENE: From UK : The Boots Company India Ltd., 13,680 kgs., Rs. 5,86,529.

ISOBUTYL QUINOLINE : From Netherlands : Hindustan Lever Ltd., 100 kgs., Rs. 2,93,025. From Switzerland : The Tata Oil Mills Co. Ltd., 30 kgs., Rs. 37,139.

ISOCAMPHYL CYCLOHEXANOL : From Switzerland : Hindustan Lever Ltd., 500 kgs., Rs. 1,05,683.

ISODECYL DIPHENYL PHOSPHATE : From UK : Universal Cables Ltd., 440 kgs., Rs. 18,599.

ISOEUGENOL PURE : From 500 kgs., Rs. 83,035.

ISOPROPYL ALCOHOL: From Saudi Arabia : Universal Lugg. Mfg. Co. Ltd., 1,02,960 kgs., Rs. 7,70,156.

ITACONIC ACID: From Iran: S.R. Lilaram, 500 kgs., Rs. 25,318; From USA : Indofil Chemicals Ltd., 5,000 kgs., Rs. 2,04,486.

JASMONYL : From Switzerland : Hindustan Lever Ltd.. 300 kgs., Rs. 73,976.

LACTOSE BP / IP : From FRG : Hoechst India Ltd., 18,000 kgs., Rs. 2,23,351.

LAVENDER OIL : From France : Mohd. Ayub Modh. Yoqub, 300 kgs., Rs. 33,182.

LEMON OIL : From France: The Tata Oil Mills Co. Ltd., 125 kgs., Rs. 43,582 ; From Italy : Bhagwati Foods Pvt. Ltd., 1,000 kgs., Rs. 66,425.

LINALOOL: From UK: Stellage Industries, 340 kgs., Rs. 42,946.

LYRAL : From Netherlands : Hindustan Lever Ltd.. 1,200 kgs., Rs. 3,63,351.

L-LYSINE MONO HCL USP: From Japan : NR Jet Pharmaceuticals Ltd., 400 kgs., Rs. 25,966.

D-MALIC ACID : From Iraq: Shakti Impex Pvt. Ltd., 17.5 Mts., Rs. 3,40,477.

MERCAPTOBENZIMIDAZOLE : From Japan : The National Corporation Ltd., 1 Mt., Rs. 1,84,042.

2 - MERCAPTOBENZOTHIAZOLE : From Korea : Puneet Resins Pvt. Ltd., 10.7 Mts., Rs. 1,38,921 ; Rishiroop Polymers Pvt. Ltd., 8 Mts., Rs. 1,03,866.

METHYL ACETO ACETATE: From Japan : Vani Chemicals & Intermediates, 9 Mts., Rs. 2,00,161.

N-METHYL ANILINE : From FRG : Jay Chemical Industries, 1,000 kgs., Rs. 59,080 ; From Spain : Brahma Woollen Industries, 1,000 kgs., Rs. 59,080 ; From UK : Asian Leather Cloth Mfg. Co.. 1,000 kgs., Rs. 59,080.

METHYL HEPESIDINE: From Japan : Cadila Laboratories Pvt. Ltd., 150 kgs., Rs. 1,85,679.

METHYLISOBUTYL KETONE : From Taiwan : Sarabhai Chemicals, 3.3 Mts., Rs. 36,846.

METHYL THIOPHENE: From UK : Sun Exports Corporation, 600 kgs., Rs. 2,31,886.

MOLYBDENUM TRIOXIDE : From UK : Sudarshan Chemical Industries, 2,000 kgs., Rs. 1,71,379.

MONOCHLORO ORTHOPHENYL PHENOL : From UK: Nucan Industries P. Ltd., 1 Mt., Rs. 65,653.

MURIATE OF POTASH: From Jordan : Indian Potash Ltd., 21,600 kgs., Rs. 2,76,67,908.

NAPHTHALENE: From Australia : Deepak Trading Co., 17,218 kgs., Rs. 69,085 ; National Agricultural Co-op., 24,503 kgs., Rs. 98,315 ; Nav Bharat Traders, 86,093 kgs., Rs. 3,45,428; From Egypt : Amal Rasayan Ltd., 1,00,000 kgs., Rs. 3,99,641; Nandesari Rasayani Pvt. Ltd., 17,218 kgs., Rs. 69,085 ; Zenith Ltd., 34,437 kgs., Rs. 1,38,170; From Italy : Dr. Beck & Co. (I) Ltd., 51,655 kgs., Rs. 2,07,256.

NAPHTHALENE CRUDE : From Australia : Amar Dye Chem Ltd., 1,04,440 kgs., Rs. 5,96,627 ; The Atul Products Ltd., 246.1 Mts., Rs. 1,27,807 ; From Egypt : Rahul Dye Chem Industry P. Ltd., 68,874 kgs., Rs. 2,76,340.

NARCOTAN BRAND HALOTHANE BP : From Indonesia : Chembiban Corporation, 1,500 kgs., Rs. 1,89,906.

3 - NITRO 4 - HYDROXYPHENYL ARSENIC ACID : Hoechst India Ltd., 1,000 kgs., Rs. 1,81,765.

OCTOIC ACID : From FRG : Chemical Intermediates, 14.040 kgs., Rs. 2,40,235.

OIL CLOVE : From France : Besta Cosmetics Ltd., 25 kgs., Rs. 29,215.

OIL SPEARMINT : From France : Besta Cosmetics Ltd., 1,000 kgs., Rs. 4,20,794.

OIL PEPPERMINT PIPERITA : From France : Besta Cosmetics Ltd., 1,500 kgs., Rs. 6,34,797.

OLEYL CETYL ALCOHOL : From Italy : Indian Petrochemicals Corpn. Ltd., 13,600 kgs., Rs. 2,71,038.

PARAFFIN WAX : From Japan : Ceat Tyres Of India Ltd., 2,000 kgs., Rs. 84,134.

PARAFORMALDEHYDE : From Germany : Ashok Enterprises, 9,990 kgs., Rs. 50,325.

PARAMETHYL QUINOLINE: From U.S.A. : International Industries, 10 kgs., Rs. 11,575.

PARATERTIARY BUTYL PHENOL : From Japan : Gem Synthetics and Polymers, 5 Mts., Rs. 84,391.

PATCHOULI OIL: From Australia: Super Traders Corporation, 600 kgs., Rs. 1,75,273; Warden & Co. (I) P. Ltd., 500 kgs., Rs. 84,391; From U.S.A.: United States Information, 600 kgs., Rs. 1,63,589.

PEROXY ACETIC ACID: From U.K.: Max India Ltd., 3,000 kgs., Rs. 1,65,219.

PHENOL: From Japan: Hico Products Ltd., 10,000 kgs., Rs. 1,25,938.

POLYVINYL ALCOHOL: From Japan: Shriji Chemicals, 5,000 kgs., Rs. 1,00,620; From Malaysia: Microtex Elastics P. Ltd., 8.820 Mts., Rs. 1,77,494; From U.S.A.: Indian Chemicals, 18,000 kgs., Rs. 3,27,176.

PROPYLENE GLYCOL: From U.S.A.: Flour And Food Ltd., 12,900 kgs., Rs. 1,35,663; M.J. Exports P. Ltd., 16.770 Mts., Rs. 1,80,715; Unibond Industries, 4,300 kgs., Rs. 45,221.

PYRIDINE HYDROBROMIDE: From U.K.: Max India Ltd., 5,000 kgs., Rs. 4,34,788.

RHODAMINE BSA: From U.K.: Sudarshan Chemicals Ind., 400 kgs., Rs. 1,65,703.

RANGOLITE DP: From FRG: The Khatau Makanji Spg. & Wvg. Ltd., 1,500 kgs., Rs. 72,109.

ROSE MARY OIL: From Iran: Anil Trading Co., 50 kgs., Rs. 12,022.

SILICON DIOXIDE: From Zambia: Demosha Chemicals P. Ltd., 450 kgs., Rs. 55,305.

SIZING CHEMICALS: From Japan: Reliance Inds. Ltd., 4,200 kgs., Rs. 76,341.

SODIUM BOROHYDRIDE: From Japan: Jal Pvt. Ltd., 300 kgs., Rs. 1,85,011.

SODIUM LAURYL SULPHATE: From Indonesia: Chemicals Corpn., 15,000 kgs., Rs. 3,21,335.

SODIUM METHOXIDE: From FRG: Burroughs Wellcome Ltd., 3,000 kgs., Rs. 1,55,219.

SOLVENT NAPHTHA: From FRG: Dr. Beck & Co. Ltd., 1,05,840 kgs., Rs. 5,97,754.

SOLVENT YELLOW 44: From U.K.: Sudarshan Chemical Inds., 100 kgs., Rs. 76,692.

SOYA LECITHIN: From Australia: The Raymond Woollen Mills Ltd., 5,000 kgs., Rs. 33,822; From Brazil: Lucky Industries, 20 Mts., Rs. 1,29,832; Universal Polymers, 10,000 kgs., Rs. 64,916.

STEMONE: From Switzerland: Hindustan Lever Ltd., 250 kgs., Rs. 85,552.

SULPHUR IN BULK: From Kuwait: Grasim Industries Ltd., 4,000 Mts., Rs. 61,84,831.

SYNTHETIC RESIN: From U.K.: Sundaram Publications, 1,571 kgs., Rs. 36,400.

TARTARIC ACID: From Australia: Super Traders Corp., 36 Mts., Rs. 13,06,891.

TEREPHTHALIDIALDEHYDE: From FRG: Indian Dyestuff Inds. Ltd., 1,000 kgs., Rs. 3,66,660.

TERTIARY BUTANOL: From FRG: Himatlal H Joshi, 2,480 kgs., Rs. 58,600; From Zambia: The Minerals & Metals Trading Corpn., 1,395 kgs., Rs. 36,940.

TERTIARY BUTYL PERBENZOATE TECH.: From FRG: Dr. Beck & Co. (I) Ltd., 200 kgs., Rs. 16,622.

TERTIARY DODECYL MERCAPTAN: From U.S.A.: Apar Pvt. Ltd., 6.435 Mts., Rs. 1,12,772.

TETRA HYDRO PARAMETHYL QUINOLINE: From U.S.A.: International Industries, 5 kgs., Rs. 6,492.

TETRAHYDRO TEREPHTHALIC ANHYDRIDE: From Italy: Dr. Beck & Co. (I) Ltd., 12,000 kgs., Rs. 2,02,539.

TETRAHYDRO PHTHALIC ANHYDRIDE: From Switzerland: Industrial Perfumes Ltd., 15,000 kgs., Rs. 2,47,457.

THIOUREA: From U.S.A.: American Embassy, 1,000 kgs., Rs. 24,668.

THYMOL / BP / USP: From France: Chemicals Centre, 750 Rs. 77,747; From U.K.: Consulate General De Belgique, 1,000 kgs., Rs. 1,06,343.

TITANIUM DIOXIDE ANATASE GRADE: From Burma: Balkrishna Paper Mills Ltd., 2.5 Mts., Rs. 859; From U.A.E.: Sathe Biscuits & Chocolates Co., 2.5 Mts., Rs. 60,859; From U.S.A.: Basant Paper Mills Ltd., 12.5 Mts., Rs. 304,295.

TITANIUM DIOXIDE: From France: Vishal Commercial Corpn., 20 Mts., Rs. 5,71,263.

TITANIUM DIOXIDE RUTILE GRADE: From FRG: Walchandnagar Industries Ltd., 20 Mts., Rs. 5,46,595; From Japan: Bhavanidas Gangadas & Co., 2,500 kgs., Rs. 74,654; From U.K.: Chemicals De Universe Pvt. Ltd., 20,000 kgs., Rs. 5,57,368; From U.S.A.: Asian Paints (I) Ltd., 34,000 kgs., Rs. 8,60,789; 51,000 kgs., Rs. 12,91,183.

TRIETHYLANILINE: From Belgium: Metro Exporters Pvt. Ltd., 7,280 kgs., Rs. 1,49,390.

VANILLIN P: From Belgium: Indian Petrochemicals Corpn. Ltd., 400 kgs., Rs. 64,137.

ZINC OXIDE: From Italy: Aero Shine, 4,945 kgs., Rs. 38,860

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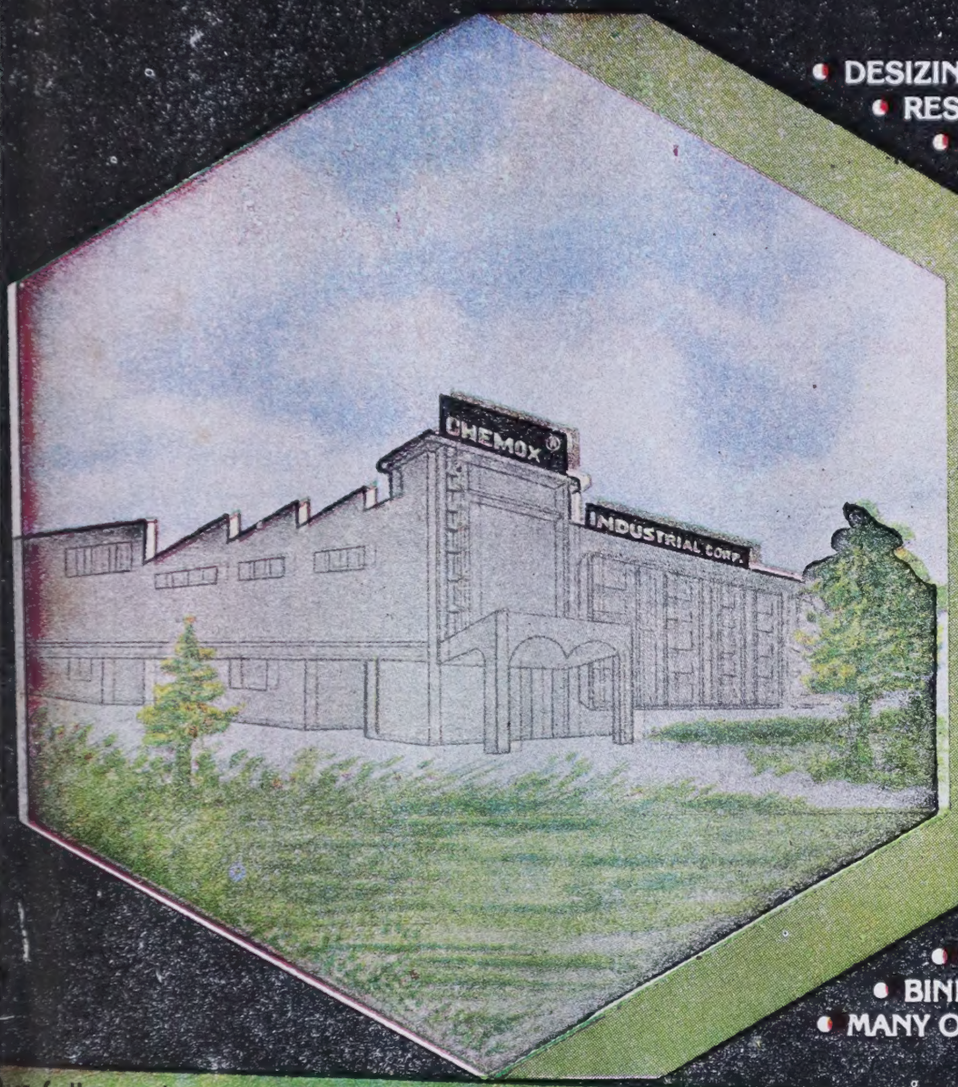

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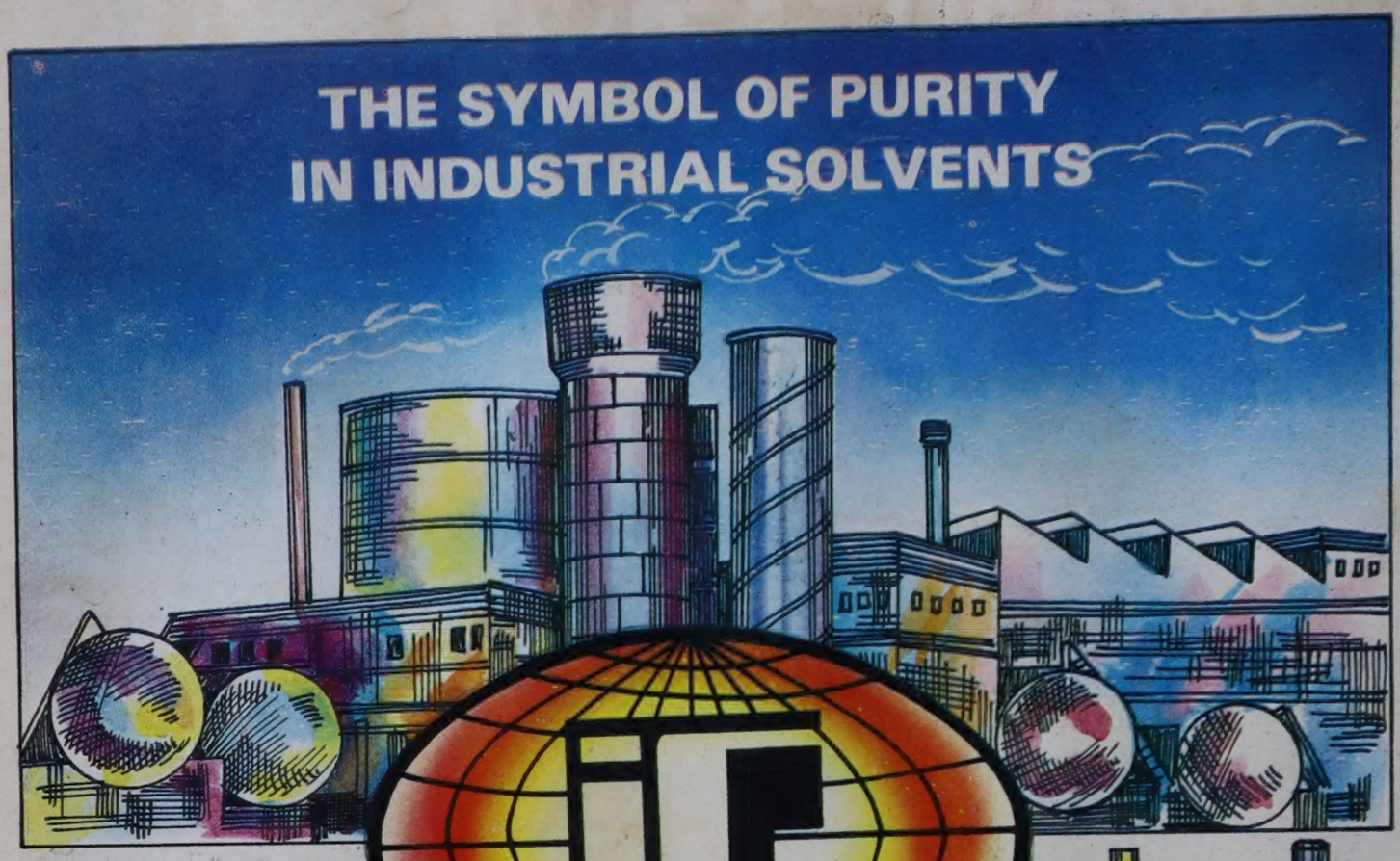

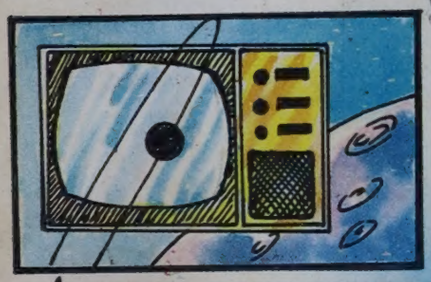

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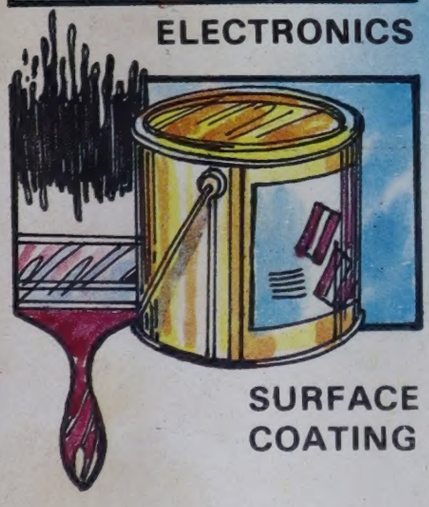

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